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ABSTRACT

Information on the participation of women and minorities in all fields and at most levels in American colleges and universities is presented, the condition of these underrepresented groups in the academic profession is examined, and future trends for the profession are projected. Enrollment data by type of institution, level of study, and various fields of study are presented for a number of decades, and in some cases from 1920-77. The number of doctorate degrees granted to women from 1973-76 by the 99 leading institutions is indicated. Appended materials provide a more detailed analysis of the availability of recent doctorate recipients with a detailed listing of subfields. Data indicate that since 1965, the number of women baccalaureates produced in an academic year has nearly doubled, and the proportion of women awarded doctorates has doubled in the past decade. Minority students are underrepresented in universities and professional programs: over 50 percent of all black college students attended a two-year college in 1976. Women are underrepresented in the academic labor pool, and minorities are even less represented. Areas of employment entered by 1960-74 Ph.D's for men and women by field of doctorate are designated. Data on the sex and ethnic composition of American faculty, by rank, are presented. Findings indicate that the professoriate, particularly at the higher ranks, remains overwhelmingly white and male. It is concluded that affirmative action efforts will face difficulties in the future because of increasing retrenchment. (SW)

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Sloan Commission on Government
and Higher Education

Background Paper

THE CONDITION OF WOMEN IN HIGHER EDUCATION:
A DECADE OF PROGRESS,
AN UNCERTAIN FUTURE

TO WHOM IT MAY CONCERN: THIS
DOCUMENT IS LOANED TO YOU BY

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by

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January 1979

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Discrimination against women and minorities in all spheres of American life has been a major topic of public and governmental concern for more than a decade. During this period, much discussion has focused on the underrepresentation of women and minorities in higher education. Beginning with Title VII of the Civil Rights Act of 1964, the federal government has enacted statutes and issued Executive Orders to enforce the prohibition of discrimination. Executive Order 11246, issued in 1968 and amended in 1973 by Executive Order 11375, for example, not only bans discrimination, it also requires institutions to have written affirmative action plans to increase the numbers of women and minorities in the academic work force. Consequently, the federal government, institutions of higher education, and civil rights interest groups have each sought to influence the enforcement of these, and other, orders and statutes in order to protect values important to their own interests. Although there is broad agreement on the desirability of greater participation of women and minorities, there is still disagreement about its immediate practicality.

The special nature of the academic labor market demands that any policy discussion concerning discrimination in academia include some historical and statistical data to document the past and present condition of women and minorities in higher education. An assessment of the performance of institutions in providing equality of opportunity must be based, in part, on the standards and requirements of the profession in question; therefore, discrimination in academia involves serious questions about the availability of qualified women and minorities in the academic labor pool. In many fields, particularly in the "hard" sciences, women and minorities are dramatically underrepresented at all levels of academia. This may not, in itself, constitute discrimination; but, this does not excuse any institution from its

obligation to encourage increased participation at all levels of educational attainment and employment for underrepresented groups. In the past decade, social and legal pressures have increased the number of women and minorities in all fields and at most levels in American colleges and universities. This paper will examine the progress these underrepresented groups have made, as well as the great challenges which still lie ahead.

Higher education now faces a period of retrenchment which will make the encouragement and enforcement of affirmative action more problematic. Total undergraduate enrollment is expected to decline sharply in the next decade. Severe financial constraints will also plague institutions. The age structure of the current professoriate, a product of the 1960s boom, will also complicate affirmative action efforts. Thus, the first large wave of women Ph.D.'s from the early years of this decade are now becoming eligible for tenure at a time when institutions are being forced to restrict the number of their tenured faculty. In addition, institutions will be forced to cut back on the number of new hires at a time when significant numbers of women in previously underrepresented fields are beginning to receive the credentials necessary for tenure-track positions. This paper will document the condition of women and minorities in academia and will offer some tentative observations on the future of these underrepresented groups in academia in this context.

The decade of the 1960s constituted a period of unprecedented expansion in enrollment and faculty for higher education. Yet, women and minorities did not begin to increase their share of this growth until the last years of the decade. Elsewhere, historians and sociologists have written about the changes made in social institutions to neutralize or reverse the past overt or tacit discrimination which had limited the participation of women and minorities. Higher education is no exception; as social mores changed,

and as anti-discrimination statutes and orders were issued, more opportunities became available for women and minorities in academia. But, as late as 1970, white males still dominated the college campus: at least 75 percent of the faculty and about 55 percent of the undergraduate student body were white males. Women constituted little more than 22 percent of the faculty and 40 percent of the undergraduates; in addition, women represented only 5 percent and 13 percent of those enrolled in first professional and doctorate programs, respectively. Minorities were even less well-represented than women: only 2 percent of the faculty, less than 4 percent of the graduate students, and only about 7 percent of the undergraduates in 1970 were black.¹

By 1978, some progress had been made: women now represent over 48 percent and blacks almost 11 percent of the total enrollment in undergraduate education in the nation. From 1967 to 1977, the annual number of females awarded a doctorate more than tripled; at the same time, the percentage of women doctorates produced doubled to nearly 25 percent of the total. In addition, today, one-quarter of the nation's faculty are women. For blacks, progress has been slower in coming: most of the enrollment boom is at the two-year college level. Today, blacks still constitute only slightly more than 4 percent of the Ph.D.'s granted annually and about the same proportion of all of the country's faculty.²

Table 1 demonstrates the impact of a decade of efforts to increase the participation of women and minorities at the undergraduate level. Enrollment data confirm that the rate of college attendance is increasing for all students, with the exception of white males, regardless of sex or race.³ Table 2 shows that young men have a lower rate of college attendance today in each income level than at any time in the past decade. Table 2 also demonstrates that women from poor families have benefited the most from

the upsurge in college enrollment. These figures show who are the "new" students attracted to higher education in the 1970s.

Table 1

PERCENT WOMEN AND MINORITIES
IN TOTAL DEGREE CREDIT ENROLLMENT
1972-1977

	<u>1972</u>	<u>1974</u>	<u>1976</u>	<u>1977</u>
Women	43.2	45.0	47.2	48.8
Black	5.9	5.9	8.7	9.3
Hispanic	[2.9	3.0]	2.4	
Asian/Pac.			1.7	
Amer. Indian			0.5	
Total Minorities	8.8	8.9	13.3	

Source: Professional Women and Minorities,
Scientific Manpower Commission, p. 8.

Table 2

COLLEGE ENROLLMENT RATES *
OF DEPENDENT FAMILY MEMBERS,
18 TO 24 YEARS OLD,
BY FAMILY INCOME (IN 1967 DOLLARS) AND SEX:
1967, 1972, AND 1976

<u>Sex and Family Income</u>	<u>1967</u>	<u>1972</u>	<u>1976</u>
TOTAL			
All incomes	39.1	37.8	38.8
Less than \$5,000	20.0	22.6	22.4
\$ 5,000 to \$ 9,999	37.9	34.2	36.3
\$10,000 to \$14,999	51.9	44.2	47.5
\$15,000 and over	68.3	56.9	58.2
Not reported	36.4	36.5	34.9
Male			
All incomes	42.9	37.8	35.3
Less than \$5,000	22.1	21.5	18.9
\$ 5,000 to \$ 9,999	43.0	34.3	32.1
\$10,000 to \$14,999	56.8	43.7	43.0
\$15,000 and over	71.0	57.3	54.5
Not reported	39.2	37.9	33.6
Female			
All incomes	34.9	38.0	43.2
Less than \$5,000	17.5	23.9	26.4
\$ 5,000 to \$9,999	32.0	34.2	41.6
\$10,000 to \$14,999	46.3	45.0	53.1
\$15,000 and over	65.2	56.4	63.1
Not reported	33.5	34.7	36.6

* Relatives of the primary family heads other than spouses.

Source: U.S. Department of Commerce, Bureau of the Census,
School Enrollment--Social and Economic Characteristics of
Students, Series P-20, No. 319.

An examination of the pattern of college attendance of women and minorities is also revealing. Table 3 compares enrollment data by sex and type of institution; despite the progress women have made, significantly fewer women attend higher education full-time or at universities. In all, 42 percent of enrolled women were part-time students in 1976, one-half of which were attending two-year colleges. The smallest percentage of women (42 percent) was in the category of full-time university student.

Similarly, minority students are underrepresented in universities and professional programs. Whereas blacks constitute 11.6 percent of the population of the United States, and an even greater percentage of the 18-24 age cohort, only 9.7 percent of those enrolled in higher education in 1976 were black. Indeed, only 5.2 percent of those attending universities were black. Eleven percent of those attending other four-year colleges were black; the 102 predominantly black colleges contribute prominently here. In contrast, 13.1 percent of two-year college enrollees are black.⁴ But, most analysts believe that blacks have made substantial progress in college attendance rates in the past decade. For example, a Ford Foundation report written last summer estimated that the number of blacks in post-secondary education has grown from 470,000 in 1970 to at least 915,000 in 1978.⁵ A more complete discussion of the condition of minorities in higher education can be found in Developing Institutions: Background and Policy Alternatives, a working paper written for the Sloan Commission on Government and Higher Education by Edward S. Gruson in December 1978.⁶

Table 4 summarizes the representation of blacks and other minorities at different types of institutions; note the large number of blacks at private universities and other four-year colleges. This may be attributed to both the critical presence of historically black colleges and universities and

Table 3

TOTAL ENROLLMENT BY SEX,
TYPE AND LEVEL OF INSTITUTION ATTENDED,
AND BY ATTENDANCE STATUS: 1976

	<u>Men</u>	<u>% of Total</u>	<u>% of Men</u>	<u>Women</u>	<u>% of Total</u>	<u>% of Women</u>
All Institutions	5,860,215	(53)	(100)	5,261,211	(47)	(100)
full-time	3,742,049	(55)	(63.9)	3,061,040	(45)	(58.2)
part-time	2,118,166	(49)	(36.1)	2,200,171	(51)	(41.8)
Universities	1,581,628	(56)	(27.0)	1,222,877	(44)	(23.2)
full-time	1,210,384	(58)	(20.7)	869,555	(42)	(16.5)
part-time	371,244	(51)	(6.3)	353,322	(49)	(6.7)
Other Four-Year	2,284,235	(52)	(39.0)	2,116,073	(48)	(40.2)
full-time	1,615,552	(53)	(27.6)	1,414,657	(47)	(26.9)
part-time	668,683	(49)	(11.4)	701,416	(51)	(13.3)
Two-Year	1,994,352	(51)	(34.0)	1,922,261	(49)	(36.5)
full-time	916,113	(54)	(15.6)	776,828	(46)	(14.8)
part-time	1,078,239	(48)	(18.4)	1,145,433	(52)	(21.8)

Source: Digest of Education Statistics, 1977-78, p. 93.

Table 4

FULL-TIME ENROLLMENT IN INSTITUTIONS OF HIGHER EDUCATION,
BY RACIAL/ETHNIC GROUP AND LEVEL AND CONTROL OF INSTITUTION:
AGGREGATE UNITED STATES, FALL 1976

Level of Institution	Total	White ¹	Black ¹	Hispanic	American		
					Asian or Indian/ Pacific Islander	Non- Alaskan resident Native	Alien
UNIVERSITY:							
Number	2,079,939	1,794,252	107,399	56,115	42,401	9,494	70,278
Percent	100.0	86.3	5.2	2.7	2.0	0.5	3.4
Private:							
Number	480,729	401,856	31,403	10,717	10,511	1,657	24,585
Percent	100.0	83.6	6.5	2.2	2.2	0.3	5.1
Public:							
Number	1,589,210	1,382,396	75,996	45,398	31,890	7,837	45,693
Percent	100.0	87.0	4.8	2.9	2.0	0.5	2.9
OTHER 4-YEAR:							
Number	3,015,236	2,447,698	330,324	113,188	43,202	15,302	65,522
Percent	100.0	81.2	11.0	3.8	1.4	0.5	2.2
Private:							
Number	1,139,262	944,427	107,116	41,584	11,444	3,446	31,245
Percent	100.0	82.9	9.4	3.7	1.0	0.3	2.7
Public:							
Number	1,875,974	1,503,271	223,208	71,604	31,758	11,856	34,277
Percent	100.0	80.1	11.9	3.8	1.7	0.6	1.8
2-YEAR							
Number	1,690,775	1,272,034	221,874	119,444	33,908	18,424	25,091
Percent	100.0	75.2	13.1	7.1	2.0	1.1	1.5
Private:							
Number	118,507	78,920	16,479	18,100	700	1,496	2,812
Percent	100.0	66.6	13.9	15.3	0.6	1.3	2.4
Public:							
Number	1,572,268	1,193,114	205,395	101,344	33,208	16,928	22,279
Percent	100.0	75.9	13.1	6.4	2.1	1.1	1.4

*Non-Hispanic

NOTE: These data do not include those institutions that did not provide information by ethnic and racial categories.

Source: U.S. Department of Health, Education, and Welfare, Office for Civil Rights and National Center for Education Statistics, preliminary data.

the broad access and choices made possible by federal financial aid policy. Examination of these figures reveals that over 50 percent of all black college students attended a two-year college in 1976; in contrast, less than one-third of all white students were enrolled in a two-year program. Thus, while access to higher education is improving for blacks in America, barriers, perceived or real, to equality in educational attainment still exist.

Table 5 demonstrates that women represent an ever-increasing share of degree recipients. Thus, since 1965, the number of women baccalaureates

Table 5
EARNED DEGREES, BY LEVEL AND SEX OF STUDENT

	<u>Academic Year Ending</u>		
	<u>1965</u>	<u>1970</u>	<u>1976</u>
Bachelor's Degrees			
Male	288,538 (57.6%)	450,234 (56.9%)	504,925 (54.5%)
Female	212,710 (42.4%)	341,276 (43.1%)	420,821 (45.5%)
Master's Degrees			
Male	77,554 (66.2%)	125,624 (60.3%)	167,248 (53.6%)
Female	39,608 (33.8%)	82,667 (39.7%)	144,523 (46.4%)
First-Professional Degrees			
Male	27,748 (96.5%)	33,940 (95.0%)	52,892 (84.4%)
Female	1,007 (3.5%)	1,784 (5.0%)	9,757 (15.6%)
Doctor's Degrees			
Male	14,692 (89.2%)	25,890 (86.7%)	26,267 (77.1%)
Female	1,775 (10.8%)	3,976 (13.3%)	7,797 (22.9%)

Source: The Condition of Education: 1978, p. 138.

produced in an academic year has nearly doubled, a figure still pale in comparison to the huge growth in the number of advanced degrees received by women. What is perhaps even more significant is the increase in women's share of advanced degrees: the proportion of women awarded doctorates has doubled in the past decade, while the proportion of women awarded first-professorial degrees has jumped nearly five-fold during the same period.

Despite such extraordinary progress, however, women still constituted only 15.6 percent of the first-professional and 22.9 percent of the doctor's degrees received in 1976. These figures may also dramatize a serious problem for academia: whereas as late as 1970, the number of female doctorates produced annually exceeded the number of female first-professional degree-holders, today, the situation is just the reverse. This may imply that doctorate programs, and, therefore, institutions, will find it increasingly difficult to recruit, produce, and, later, hire the very best women students. At the present time, a greater percentage of women appear to be attracted to the more lucrative professions than to academic life.

Over the years, there has been a great deal of discussion about the tendency of women to enter what are referred to as "traditional women's fields." As institutions of higher education (and other employers) seek to employ women in all fields, if only to comply with federal affirmative action principles, questions will arise not only to the quality of the women applicants, but to the quantity of women in the pool as well. Table 7 provides a field-by-field look at the growth of "credentialed" women in a sample of physical and biological sciences and social sciences. Not surprisingly, engineering has shown the greatest change; the total of female bachelor's recipients has skyrocketed 572.1 percent, while female doctorates have jumped 204.2 percent from 1970 to 1977. According to this sample data, compiled by the National Center for Education Statistics, the number of women recipients of bachelor's degrees in the physical and biological sciences surveyed has risen 87.3 per-
12
cent while the number of women recipients of bachelor's degrees in the social

TABLE 6

EARNED DEGREES CONFERRED BY FIELD, YEAR AND SEX

	B.A.				M.A.				Ph.D.			
	Male No.	%	Female No.	%	Male No.	%	Female No.	%	Male No.	%	Female No.	%
Engineering												
1949-50	52,041	99.7	175	0.3	4,481	99.7	15	0.3	416	99.8	1	0.2
1959-60	37,537	99.7	142	0.3	7,133	99.6	26	0.4	783	99.6	3	0.4
1969-70	44,149	99.3	330	0.7	15,421	98.9	172	1.1	3,657	99.3	24	0.7
1976-77	47,065	95.5	2,218	4.5	15,525	95.6	720	4.4	2,513	97.1	73	2.9
Chemistry												
1949-50	9,121	86.0	1,476	14.0	1,368	86.8	280	13.2	914	95.9	39	4.1
1959-60	5,989	79.1	1,580	20.9	1,035	84.3	203	15.7	1,000	95.4	48	4.6
1969-70	9,453	82.1	2,066	17.9	1,638	77.6	473	22.4	2,000	92.3	166	7.7
1976-77	8,659	77.2	2,586	22.8	1,324	74.9	443	25.1	1,381	88.1	187	11.9
Physics												
1949-50	3,286	96.3	127	3.7	888	96.3	34	3.7	353	98.6	5	1.4
1959-60	4,154	96.1	168	3.9	1,038	96.7	35	3.3	477	97.9	10	2.1
1969-70	4,993	93.9	327	6.1	2,043	92.9	157	7.1	1,402	97.4	37	2.6
1976-77	3,062	89.5	358	10.5	1,193	90.4	126	9.6	890	94.2	55	5.8
Biological Sciences												
1951-52	8,212	74.0	2,882	26.0	1,908	82.7	399	17.3	680	89.0	84	11.0
1959-60	11,654	74.8	3,922	25.2	1,668	77.4	486	22.6	1,086	90.1	119	9.9
1969-70	27,004	72.2	10,385	27.8	3,975	68.5	1,835	31.5	2,820	85.7	469	14.3
1976-77	34,218	63.8	19,387	36.2	4,718	66.3	2,396	33.7	2,671	78.6	726	21.4
Economics												
1949-50	13,467	92.4	1,101	7.6	807	87.6	114	12.4	191	95.5	9	4.5
1959-60	6,785	91.0	668	9.0	650	91.8	58	8.2	223	94.1	14	5.9
1969-70	15,342	89.2	1,855	10.8	1,742	87.6	246	12.4	742	93.5	52	6.5
1975-76	11,850	80.4	2,891	19.6	1,755	84.1	332	15.9	682	89.4	81	10.6
History												
1949-50	10,222	75.5	3,320	24.5	1,373	76.2	428	23.8	246	95.5	29	4.5
1959-60	9,986	67.8	4,751	32.2	1,353	75.4	441	24.6	310	94.1	32	5.9
1969-70	28,418	65.5	14,968	34.5	3,397	87.6	1,652	12.4	901	93.5	137	6.5
1975-76	18,656	80.4	9,744	19.6	2,444	84.1	1,214	15.9	789	89.4	225	10.6
Political Science and Government												
1949-50	5,356	84.5	980	15.5	597	84.1	113	15.9	117	92.1	10	7.9
1959-60	5,354	81.2	1,242	18.8	593	82.1	129	17.9	184	91.5	17	8.5
1969-70	20,587	80.1	5,126	19.9	1,663	79.0	442	21.0	469	89.3	56	10.7
1975-76	21,147	74.7	7,115	25.3	1,718	78.4	473	21.6	602	83.3	121	16.7

TABLE 6

EARNED DEGREES CONFERRED BY FIELD, YEAR AND SEX - Continued

	B.A.				M.A.				Ph.D.			
	Male		Female		Male		Female		Male		Female	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
Sociology												
1949-50	3,837	48.8	4,033	51.2	373	67.6	179	32.4	80	81.6	18	18.4
1959-60	3,162	44.2	3,985	55.8	327	74.3	113	25.7	135	83.9	26	16.1
1969-70	12,362	40.6	18,074	59.4	1,138	62.8	675	37.2	430	80.5	104	19.5
1975-76	11,245	40.7	16,389	59.3	1,165	58.0	844	42.0	511	70.1	218	29.9
Education												
1949-50	31,398	51.1	30,074	48.9	12,025	59.9	8,044	40.1	797	83.6	156	16.4
1959-60	25,838	28.9	63,583	71.1	18,126	54.1	15,386	45.9	1,281	80.6	309	19.4
1969-70	41,347	25.0	124,106	75.0	35,451	44.7	43,898	55.3	4,698	79.7	1,196	20.3
1975-76	42,046	27.2	112,712	72.8	45,659	35.7	82,289	64.3	5,176	66.6	2,593	33.4
Psychology												
1949-50	6,055	63.3	3,514	36.7	948	72.0	368	28.0	241	85.2	42	14.8
1959-60	4,773	59.2	3,288	40.8	981	69.8	425	30.2	544	84.9	97	15.1
1969-70	19,042	56.7	14,564	43.3	2,549	62.0	1,562	38.0	1,296	77.7	372	22.3
1975-76	22,832	45.7	27,076	54.3	4,171	53.4	3,640	46.6	1,762	68.3	819	31.7

Source: NCES, Earned Degrees Conferred Reports.

sciences surveyed has grown by only 19.7 percent. But, there has been a 103.1 percent growth in the number of female social science doctorates compared to a 49.6 percent increase in the number of female physical and biological science doctorates. This suggests that women are exploring greater opportunities in all fields, although the traditionally male-dominated "hard" science fields are attracting a slightly larger share of the increasing numbers of women receiving degrees. But, this reflects a trend in the academic labor market as a whole.

Table 6 points out that there have always been fewer women at each successive stage of higher education. Indeed, this appears to be true in virtually every field. While women have increased their participation at each level of educational attainment, they still fail to pursue advanced degrees at the same rate as men. In addition, a larger percentage of women

apparently drop out following the first year of graduate school; but, enrollment data also suggests that the attrition of women from graduate programs is declining.⁷

Given the greater opportunities in the private (and public) sector for qualified women at all degree levels, it is perhaps to be expected that women may choose employment rather than further education; Richard Freeman, for example, in The Over-Educated American, reports that incomes for women college graduates have risen at a higher rate than for male college graduates in the 1970s.⁸ If this is the case, once again, the ability of institutions to attract qualified women to graduate school and, later, to the faculty, may suffer.

In Opportunities for Women in Higher Education, the Carnegie Commission on Higher Education reported that in 1969 the percentage of women at successive levels of higher education declined for each type of institution. The following chart describes the situation at Research I institutions. But, the Commission explained, "fields tended to be especially sex-differentiated in universities":⁹

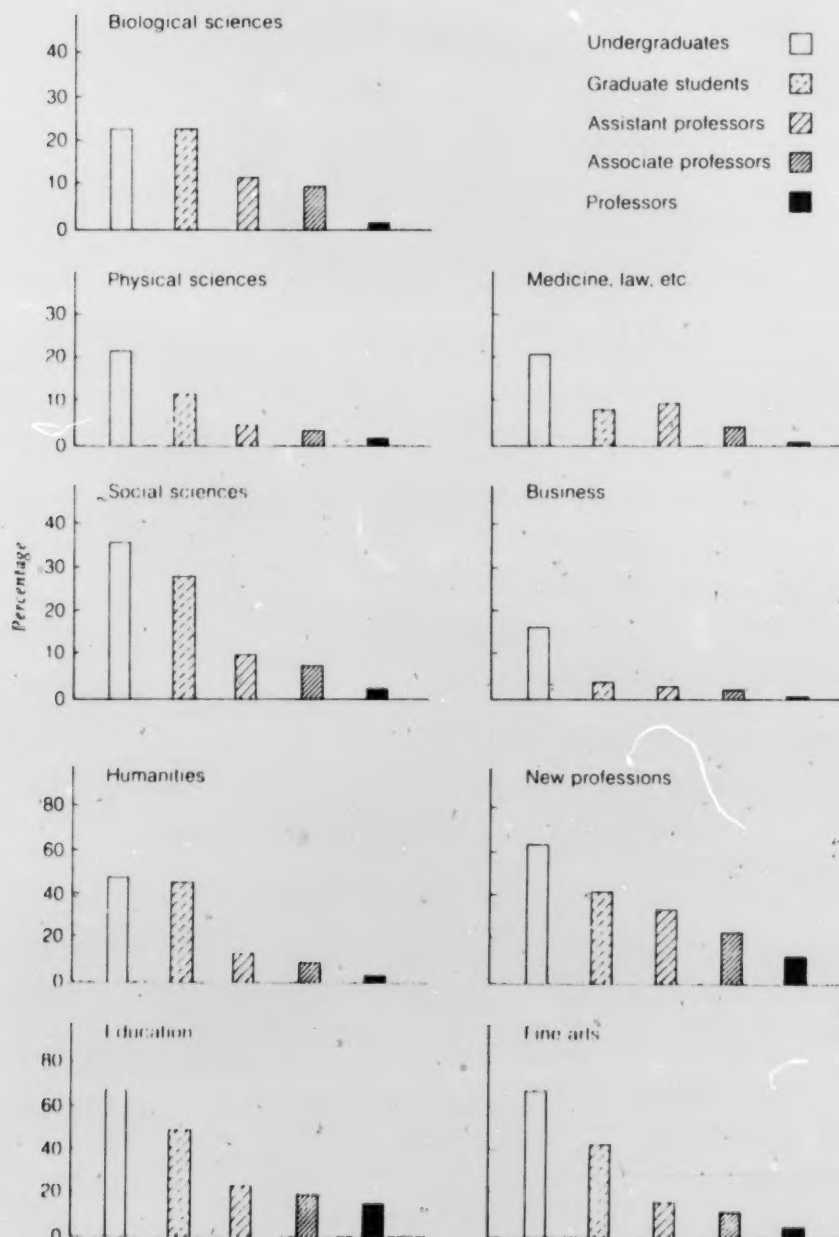
The pattern was similar in other groups of institutions, but in Liberal Arts Colleges I - a group that includes the more selective women's colleges as well as men's colleges and co-educational colleges - relatively more women were in such fields as the physical and biological sciences among undergraduates as well as among faculty members. There were also relatively more women in these fields at all stages in Comprehensive Universities and Colleges than in universities, but the percentages of women in these fields were smaller than in Liberal Arts Colleges I.

The Commission cited the lack of role models and male faculty discouragement as causes for the universities' poor showing.

Table 7 summarizes the annual number of doctorates received by women since 1920. Only in 1971, when 4,594 women (or 14.4 percent) received their doctorates, did the percentage of women seeking academic jobs reach the

Chart 1

WOMEN AS A PERCENTAGE OF PERSONS
AT SUCCESSIVE LEVELS OF HIGHER EDUCATION,
BY FIELD, RESEARCH UNIVERSITIES I



Source: Carnegie Commission Survey of Faculty and Student Opinion, 1969, in Opportunities for Women in Higher Education, p. 67.

14-to-16 percent range typical of the 1920s and 1930s. Since 1971, however, women have reached proportions in most fields far above any past performance. But, it is important to keep in mind a number of caveats which will be noted in the next several pages. Much of the early increase in female Ph.D.'s came in fields with a relatively young faculty, such as in the humanities; in fact, this increase has perhaps been distorted because of the actual decline in the number of new male doctorates. The recent upsurge in engineering, the physical sciences, and the life sciences is most encouraging; but, the numbers of women are still quite small and they are not far enough along the tenure track to have that much of an impact just yet.

Table 7

DOCTORATES AWARDED BY U.S. UNIVERSITIES,
BY SEX FY 1920 - FY 1977

YEAR	MEN	WOMEN		TOTAL	YEAR	MEN	WOMEN		TOTAL
		No.	%*				No.	%*	
CY 1920	472	88	15.7	560	CY 1950	5,898	621	9.5	6,519
1921	554	107	16.2	661	1951	6,649	682	9.3	7,331
1922	668	112	14.4	780	1952	6,984	732	9.5	7,716
1923	905	157	14.8	1,062	1953	7,589	789	9.4	8,378
1924	963	170	15.0	1,133	1954	7,912	794	9.1	8,706
1925	1,004	202	16.8	1,206	1955	8,023	881	9.9	8,904
1926	1,242	200	13.9	1,442	1956	7,695	806	9.5	8,501
1927	1,306	233	15.1	1,539	1957	5,486**	(701)**	11.3	(6,187)**
1928	1,392	236	14.5	1,628	FY 1958	7,782	991	11.3	8,773
1929	1,592	321	16.8	1,913	1959	8,236	976	10.6	9,212
1930	1,758	313	15.1	2,071	1960	8,690	1,042	10.7	9,732
1931	1,979	361	15.4	2,340	1961	9,284	1,128	10.8	10,412
1932	2,017	384	16.0	2,401	1962	10,269	1,236	10.7	11,505
1933	2,113	347	14.1	2,460	1963	11,333	1,391	10.9	12,724
1934	2,346	350	13.0	2,696	1964	12,763	1,561	10.9	14,324
1935	2,152	369	14.6	2,521	1965	14,581	1,759	10.8	16,340
1936	2,299	413	15.2	2,712	1966	15,863	2,090	11.6	17,953
1937	2,346	403	14.7	2,749	1967	17,944	2,440	12.0	20,384
1938	2,337	419	15.2	2,756	1968	19,985	2,931	12.8	22,916
1939	2,524	424	14.4	2,948	1969	22,341	3,387	13.2	25,728
1940	2,848	428	13.1	3,276	1970	25,509	3,970	13.5	29,479
1941	3,078	403	11.6	3,481	1971	27,247	4,594	14.4	31,841
1942	2,981	421	12.4	3,402	1972	27,719	5,282	16.0	33,001
1943	2,191	394	15.2	2,585	1973	27,645	6,082	18.0	33,727
1944	1,621	333	17.0	1,954	1974	26,585	6,415	19.4	33,000
1945	1,288	333	20.5	1,621	1975	25,720	7,193	21.9	32,913
1946	1,608	381	19.2	1,989	1976	25,247	7,676	23.3	32,923
1947	2,546	412	13.9	2,958	1977	23,827	7,845	24.8	31,672
1948	3,432	466	12.0	3,898					
1949	4,875	546	10.1	5,421	TOTAL	883,243	85,721	15.1	568,964

*Percent of total doctorate recipients **First half of calendar year

Source: Summary Reports, Doctorate Recipients from United States Universities, 1975, 1976 and 1977, National Research Council.

Table 8

NUMBER AND PERCENT OF DOCTORAL DEGREES GRANTED TO WOMEN,
BY FIELD AND DECADE, 1920-1977

	D E C A D E													
	1920-29		1930-39		1940-49		1950-59		1960-69		1970-77		1920-77 TOTAL	
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%
PHYSICAL SCIENCES	247	7.6	442	6.6	406	5.0	685	3.7	1,577	4.6	3,010	7.6	112,285	5.7
Math	51	14.5	115	14.8	89	10.7	113	5.0	364	5.7	854	9.2	19,800	8.0
Physics & Astronomy	39	5.9	51	3.8	62	4.2	98	2.0	213	2.2	448	3.9	29,498	3.1
Chemistry	141	7.3	254	6.4	223	4.2	443	4.4	931	5.4	1,472	9.8	51,034	6.8
Earth Sciences	16	4.8	22	3.5	32	5.7	31	1.9	69	2.0	229	5.0	11,157	3.6
ENGINEERING	2	.9	6	.7	7	.5	20	.3	77	.4	308	1.2	56,991	0.7
LIFE SCIENCES	378	15.9	765	15.1	738	12.7	1,318	9.1	3,078	11.6	6,649	16.9	93,229	13.9
Biological	341	19.5	698	17.8	699	15.7	1,174	11.8	2,739	15.1	5,364	20.5	64,445	17.1
Agricultural	8	2.2	11	1.6	5	.6	36	1.1	80	1.4	335	4.2	20,541	2.3
Medical	29	10.9	56	12.4	34	6.9	108	8.1	259	9.5	896	19.0	9,964	13.9
SOCIAL SCIENCES	325	17.1	562	15.8	580	14.5	1,510	11.0	3,604	14.3	10,540	22.5	95,084	18.0
Anthropology	8	22.2	28	22.4	22	15.2	90	19.3	218	21.5	1,119	42.7	4,412	27.5
Sociology	32	15.4	89	19.9	99	17.2	221	14.2	442	17.5	1,352	27.0	10,419	21.5
Economics	52	8.5	71	6.4	83	7.1	125	4.2	245	4.6	539	8.0	18,030	6.2
Pol. Sci. & Pub. Adm.	26	9.0	45	8.5	45	7.8	87	5.4	257	8.2	808	13.8	11,982	10.6
Psychology	189	29.4	290	26.0	302	24.1	911	14.8	2,264	20.7	5,981	30.1	40,002	24.8
ARTS & HUMANITIES	619	25.7	1,291	24.5	1,182	22.9	1,758	15.5	4,423	19.5	11,433	30.0	85,159	24.3
History	143	21.6	277	19.3	237	16.6	327	10.4	638	11.3	1,268	14.3	21,235	14.9
Eng. & Am. Lit.	159	30.8	385	28.4	385	26.8	548	17.8	1,515	23.9	3,755	37.3	22,753	29.7
Modern Foreign Lang.	101	29.8	287	27.0	284	29.2	396	22.9	1,032	31.2	2,673	45.1	13,379	35.7
PROFESSIONAL FIELDS	38	6.9	78	7.7	113	9.6	249	9.2	798	12.3	1,694	15.0	23,147	12.8
Business Admin	-	-	2	1.0	14	6.3	32	3.4	77	2.6	208	3.6	10,158	3.3
Law, Jurisprudence	9	3.9	14	4.7	7	6.3	14	4.7	6	2.2	13	5.6	1,433	4.4
Library Sciences	-	-	8	33.3	15	34.1	18	28.6	43	27.0	183	40.7	740	36.1
Social Work	-	-	1	50.0	3	50.0	26	41.3	180	36.7	355	35.3	1,568	36.0
EDUCATION	209	18.1	615	19.7	1,086	22.8	2,431	18.0	5,367	19.5	15,306	27.4	106,338	23.5
TOTAL ALL FIELDS	1,826	15.3	3,784	14.8	4,115	13.5	7,972	9.9	18,964	11.7	49,045	19.0	567,597	15.1

Source: Professional Women and Minorities, Scientific Manpower Commission, p. 17.

Data from Table 8 confirm these trends. Today, women constitute nearly one-third of all doctorates in the arts and humanities. Between 1970 and 1977, 11,433 women, or 7,010 more than the total of women doctorates produced in the 1960s, received their Ph.D.'s; this represented a 158.5 percent increase. In contrast, the number of female physical science and engineering doctorates doubled from 1,654 to 3,318. Thus, the numbers show that significant numbers of women are still pursuing the "traditionally women's fields," fields which have already been in the throes of a job crunch for several years. Women in the "harder" sciences still have a long way to go to match their "softer" colleagues in net percentages. Table 9 contrasts the progress made in the science and humanities fields.

Universities complain that this country still lacks a sufficient number of qualified female Ph.D.'s; by this, universities refer to the total number of women who have received doctorates from the Carnegie-classified Research I Universities from which they draw their faculties. This problem begins at the undergraduate level; despite the fact that the Research I Universities are included among the top schools in Table 10, these institutions have failed to enroll the same percentage of women in their graduate programs until very recently.

Tables 11 and 12 examine the percentage of women Ph.D.'s from selected institutions: Table 11 shows the ten largest Ph.D.-granting institutions, and Table 12 indicates the ten institutions within the top fifty Ph.D.-granting universities with the greatest proportion of female doctorates. Consequently, tables 10 through 12 suggest that although many of this country's most prestigious institutions have provided large numbers of the women baccalaureates who also hold doctorates, these same institutions have

Table 9

DEMOGRAPHIC CHARACTERISTICS OF Ph.D.'s IN 1977

<u>Calendar Year of Ph.D.</u>	<u>All Science and Engineering Fields</u>	<u>All Humanities Fields</u>
1934-39:		
Total	8,265	2,511
Women (%)	891 (11%)	468 (19%)
1940-44:		
Total	8,437	2,324
Women (%)	697 (8%)	488 (21%)
1945-49:		
Total	9,437	2,340
Women (%)	862 (9%)	497 (21%)
1950-54:		
Total	24,641	5,905
Women (%)	1,606 (7%)	779 (13%)
1955-59:		
Total	27,620	6,324
Women (%)	1,997 (7%)	835 (13%)
1960-64:		
Total	37,767	8,807
Women (%)	2,770 (7%)	1,397 (16%)
1965-69:		
Total	65,857	16,149
Women (%)	5,746 (9%)	3,196 (20%)
1970-74:		
Total	88,204	26,669
Women (%)	11,165 (13%)	6,887 (26%)
1975-76:		
Total	25,599	8,145
Women (%)	4,716 (18%)	2,793 (34%)

Source: National Research Council Doctorate File.

failed to lead academia in the production of female Ph.D.'s. This may, in part, explain why there are relatively fewer women at the higher faculty ranks in universities.

Table 10

BACCALAUREATE ORIGIN INSTITUTIONS,
RANKED BY NUMBER OF 1920-1974 WOMEN Ph.D.'s
AMONG THEIR ALUMNI

	<u>Female</u>		<u>(Percent Women)</u>	<u>Both Sexes</u>	
	<u>Number</u>	<u>Rank</u>		<u>Number</u>	<u>Rank</u>
Columbia (and Barnard)	1413	1	(27.5)	5131	8
CUNY-Hunter College	1206	2	(75.0)	1609	53
U. California-Berkeley	1071	3	(13.1)	8188	1
U. Michigan-Ann Arbor	938	4	(15.6)	6009	5
Wellesley College	885	5	(99.6)	889	113
U. Chicago	821	6	(17.5)	4686	11
U. Minnesota-Minneapolis	789	7	(14.4)	5496	7
CUNY-Brooklyn College	774	8	(19.3)	4014	16
Harvard (and Radcliffe)	772	9	(11.7)	6605	4
Cornell University	745	10	(14.9)	5010	9

Source: A Century of Doctorates, Appendix G.

Table 11

Ph.D. INSTITUTIONS,
RANKED BY NUMBER OF Ph.D.'s,
WITH PERCENTAGE OF WOMEN
AMONG THEIR DOCTORATES, 1958-1974

	<u>Number</u>	<u>Rank</u>	<u>Percent Women</u>
U. Wisconsin-Madison	10,587	1	12.5
U. California-Berkeley	10,438	2	13.1
U. Illinois-Urbana	10,088	3	11.4
U. Michigan-Ann Arbor	8,961	4	14.7
Harvard University	8,574	5	15.8
Columbia University*	7,916	6	23.4
Ohio State University	7,803	7	14.1
New York University	7,375	8	22.8
Michigan State University	7,080	9	10.6
U. Minnesota-Minneapolis	7,039	10	12.3

*excludes Teacher's College

Table 12

LEADING Ph.D.-GRANTING INSTITUTIONS,
RANKED BY PERCENTAGE OF WOMEN AMONG THEIR DOCTORATES,
1958-1974

	Number of Women	Percent Women	Rank for Both Sexes
Boston University	702	26.7	42
Columbia University*	1852	23.4	6
New York University	1534	20.8	8
Wayne State University	454	19.2	49
U. of Pittsburgh	723	19.0	27
Florida State University	597	18.9	34
U. California-Los Angeles	1133	17.5	14
U. North Carolina-Chapel Hill	577	17.3	31
Yale University	833	16.8	19
Rutgers University	526	16.7	35

*excludes Teacher's College

But, as we have noted, women have made dramatic progress in this decade. For any number of reasons, including federal pressure, the number of women Ph.D.'s produced by the Research I Universities has grown at about the same rate as it has at other types of institutions. In most cases, however, the best institutions still lag behind. Allan Cartter, in Ph.D.'s and the Academic Labor Market, noted that in the 1960s the percentage of doctorates awarded to women increased as the class of degree-granting institution decreased, although the gap was beginning to close by the middle years of this decade.¹⁰ Table 13 looks at a sample of Research I schools and surveys the progress women have made there.

Still, the Research I institutions have either failed to recruit, or to attract, the percentage of women doctorates other schools have. In a February 27, 1978 Fact-File, The Chronicle of Higher Education listed the 99 leading institutions in proportion of women doctorates for 1973-1976 (see Table 14). Only 24 of the 51 Research I schools are included in the table; the private institutions, interestingly enough, fare better than the public universities. Notable among the absent are several of the country's

Table 13
PRODUCTION OF WOMEN PH.Ds FROM CARNEGIE I INSTITUTIONS
 (sample)

	<u>Physical Sciences</u>		<u>Engineering</u>		<u>Life Sciences</u>		<u>Behavioral Sciences</u>		<u>Humanities</u>	
	<u><i>n</i></u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>	<u>#</u>	<u>%</u>
U. of Wisconsin - Madison										
1920-1959	48	3	2	*	225	9	69	7	263	22
1960-1969	51	5	1	*	132	9	62	9	183	19
1970-1974	35	5	3	1	125	14	128	19	232	24
U. of California - Berkeley										
1920-1959	82	5	0	0	160	11	105	12	139	16
1960-1969	69	4	4	*	144	16	150	16	110	16
1970-1974	50	7	5	1	140	26	164	22	175	32
U. of Illinois - Urbana										
1920-1959	103	5	1	*	102	9	38	6	143	20
1960-1969	69	6	5	*	109	10	62	11	124	20
1970-1974	46	6	3	1	97	15	113	19	163	31
U. of Michigan - Ann Arbor										
1920-1959	74	6	3	1	136	14	105	14	120	14
1960-1969	74	6	3	1	136	14	105	14	120	14
1970-1974	41	5	1	*	98	16	127	15	145	18
	28	6	4	1	92	19	175	22	207	28
U. of Minnesota - Minneapolis										
1920-1959	34	4	0	0	90	5	129	15	78	18
1960-1969	23	5	3	1	55	5	97	14	74	15
1970-1974	34	12	4	1	62	10	147	23	93	22

* Less than 1 percent.

Table 13

Production of Women Ph.Ds from Carnegie I Institutions (cont.)

	Physical Sciences		Engineering		Life Sciences		Behavioral Sciences		Humanities	
	#	%	#	%	#	%	#	%	#	%
Harvard U.										
1920-1959	76	5	1	1	121	16	190	11	276	12
1960-1969	50	5	1	1	100	24	139	15	258	19
1969-1970	34	6	0	0	87	26	138	20	240	27
Columbia U.										
1920-1959	178	12	1	*	181	26	339	20	467	22
1960-1969	58	8	3	1	100	33	283	24	384	27
1970-1974	37	9	1	1	64	42	276	35	330	37
U. of Chicago										
1920-1959	138	8	1	100	221	20	251	14	263	21
1960-1969	41	6	0	0	59	17	135	16	68	15
1970-1974	32	8	0	0	43	19	139	22	144	25
Stanford U.										
1920-1959	30	5	0	0	37	11	45	11	110	22
1960-1969	31	4	6	1	46	21	73	17	98	18
1970-1974	28	5	8	1	50	25	76	19	150	32
M.I.T.										
1920-1959	52	3	3	*	8	8	2	2	0	0
1960-1969	46	4	8	1	11	8	26	9	2	6
1970-1974	43	6	6	1	43	29	27	13	14	27

* Less than 1 percent

Source: National Research Council. A Century of Doctorates. Appendix E

Table 14

99 LEADING INSTITUTIONS
IN PROPORTION OF Ph.D.'s GRANTED TO WOMEN,
1973-1976

	Women doctorates	Total doctorates	Percentage of women		Women doctorates	Total doctorates	Percentage of women
Texas Woman's U.	148	150	98.7%	Nova U.	183	748	24.5%
Bryn Mawr C.	117	170	68.8%	U. of Houston	134	547	24.5%
Atlanta U.	21	40	52.5%	Brown U.	145	594	24.4%
U. of North Carolina, Greensboro	74	141	52.5%	U. of California, Irvine	77	315	24.4%
Cornell U., Medical C.	29	60	48.3%	Wayne State U.	221	907	24.4%
Teachers C., Columbia U.	400	903	44.3%	Northwestern U.	365	1,503	24.3%
U. of California, San Francisco	64	155	41.3%	U. of Tulsa	27	111	24.3%
Florida Atlantic U.	20	49	40.8%	Idaho State U.	16	66	24.2%
City U. of New York	277	709	39.1%	U. of North Carolina, Chapel Hill	310	1,280	24.2%
				U. of Pennsylvania	389	1,608	24.2%
Adelphi U.	49	128	38.3%	Duquesne U.	14	58	24.1%
Hofstra U.	60	162	37.0%	U. of New Mexico	134	560	23.9%
Boston U.	366	1,003	36.5%	U. of South Florida	16	67	23.9%
U. of Missouri, Kansas City U. of Texas Health Science Center, Dallas	50	137	36.5%	Yale U.	333	1,391	23.9%
Fordham U.	15	43	34.9%	St. Louis U.	133	558	23.8%
Georgia State U.	225	650	34.6%	U. of South Carolina	100	421	23.8%
Columbia U.	99	290	34.1%	George Washington U.	147	621	23.7%
Baylor C. of Medicine	683	2,012	33.9%	U. of California, Los Angeles	493	2,122	23.2%
Boston C.	15	46	32.6%	U. of Texas, Austin	431	1,872	23.0%
	100	312	32.1%	North Texas State U.	101	441	22.9%
Brandeis U.	135	422	32.0%	U. of Michigan	659	2,894	22.8%
Middle Tennessee State U.	14	44	31.8%	U. of Colorado	258	1,138	22.7%
Yeshiva U.	68	215	31.6%	Auburn U.	78	335	22.7%
Tufts U.	67	213	31.5%	Indiana State U.	17	75	22.7%
New York U.	707	2,322	30.4%	U. of Denver	84	371	22.6%
Loyola U., Chicago	90	299	30.1%	U. of Indiana, Bloomington	536	2,370	22.6%
Memphis State U.	36	120	30.0%	Northern Illinois U.	79	351	22.5%
U. of Illinois C. of Medicine	48	155	29.7%	U. of Massachusetts	300	1,336	22.5%
Emory U.	97	329	29.5%	Yeshiva U., Einstein School of Medicine	11	49	22.4%
George Peabody C.	93	315	29.5%				
Georgetown U.	91	310	29.4%	U. of Kansas	243	1,083	22.4%
Catholic U. of America	197	690	28.6%	East Texas State U.	53	238	22.3%
U. of Miami, Florida	109	395	27.6%	Kent State U.	105	471	22.3%
U. of Alabama	152	552	27.5%	U. of Alabama, Birmingham	14	63	22.2%
U. of Pittsburgh	445	1,633	27.3%	Wesleyan U., Connecticut	14	63	22.2%
U. S. International U.	147	556	26.4%	U. of Southern California	427	1,934	22.1%
Tulane U.	108	423	25.4%	Washington U.	136	615	22.1%
Temple U.	213	839	25.4%	Johns Hopkins U.	206	945	21.8%
U. of Maryland	368	1,448	25.4%	Duke U.	182	837	21.7%
U. of Texas, Houston	31	122	25.4%	U. of Cincinnati	150	694	21.6%
Case Western Reserve U.	224	893	25.1%	SUNY, Binghamton	36	167	21.6%
Marquette U.	45	179	25.1%				
Flutgers U.	315	1,256	25.1%	U. of Rochester	163	759	21.5%
Howard U.	38	152	25.0%	U. of Oregon	240	1,122	21.4%
New School for Social Research	46	184	25.0%	U. of Tennessee, Knoxville	223	1,042	21.4%
Virginia Commonwealth U. Medical School	16	64	25.0%	American U.	94	446	21.1%
Ball State U.	64	257	24.9%	Arizona State U.	153	727	21.0%
U. of Toledo	48	193	24.9%	Illinois State U., Normal	17	81	21.0%
Harvard U.	581	2,350	24.7%	U. of Chicago	377	1,798	21.0%
Florida State U.	346	1,407	24.6%	Ohio State U.	556	2,675	20.8%
				Texas Christian U.	22	106	20.8%
				U. of Connecticut	152	778	20.8%

NOTE: List includes only those institutions that awarded 40 or more doctorates from 1973 through 1976.

SOURCE: NATIONAL RESEARCH COUNCIL

Source: Fact-File, The Chronicle of Higher Education,
February 27, 1978.

leading institution, such as the University of California at Berkeley, the University of Wisconsin at Madison, the University of Minnesota at Minneapolis, the University of Washington at Seattle, Stanford University, The Massachusetts Institute of Technology, and Princeton University.

As underrepresented as women are in the academic labor pool, minorities are even less well-represented. After a decade of effort, academia has failed to attract large numbers of black doctoral students. Table 15 notes the paucity of minority doctorates produced as late as the middle of this decade. The trends suggested by Table 15 continue to exist: in 1977, blacks received 1,109, or 4.3 percent, of the doctorates awarded, 60.0 percent of which were in education. Only 3.8 percent and 1.0 percent of the black Ph.D.'s were in the physical sciences and engineering, respectively. Minority women still constitute a relatively high proportion of the doctorate pool. Although their absolute numbers are much smaller than black Americans, Hispanic Americans are distributed more evenly among the doctorate fields: in 1977, 11.2 percent and 4.3 percent of the doctorates awarded were in the physical sciences and engineering, respectively. But, blacks and Hispanics together accounted for only 1.3 percent of the doctoral labor force in these "hard" science fields in 1976.¹¹

Thus far, for the most part, we have been dealing with aggregate data; but, in a highly-specialized academic environment, this data may fail to provide the perspective necessary to examine the complicated issues of affirmative action. Appendix A addresses itself to a more detailed analysis of the availability of recent doctorate recipients with a much more refined listing of subfields. This appendix is most useful: if, for example, any number of the 1770 colleges offering undergraduate degrees in the physical sciences in 1976 were looking for an organic chemist, they would be considering

Table 15

RACIAL/ETHNIC GROUPS IN THE DRF, 1973-1975,
BY FIELD OF DOCTORATE AND SEX,
U.S. AND FOREIGN CITIZENS COMBINED

PhD Field		Men										Women									
		White	Black	American Indian	Spanish American, Chicano	Mexican American, Chicano	Puerto Rican	Oriental	Other	Unknown	Total	White	Black	American Indian	Spanish American, Chicano	Mexican American, Chicano	Puerto Rican	Oriental	Other	Unknown	Total
MATHEMATICS	N	1016	33	9	21	4	263	4	438	2686	212	5					38	2	31	288	
	H	11.3	1.2	0.3	0.8	0.1	2.9	0.1	4.9	30.2	10.0	1.7					13.2	0.2	1.3	18.8	100.0
	V	4.0	2.0	3.2	3.6	4.3	6.2	5.9	3.8	10.0	1.8	0.8					33.3	33.3	10.8	1.8	1.8
PHYSICS	N	2317	20	9	22	3	367	7	619	3364	85	1	1	1			37		28	153	
	H	68.9	1.6	0.3	0.7	0.1	10.9	0.2	18.4	100.0	55.6	0.2	1.3	0.9			24.2		18.3	100.0	100.0
	V	4.8	1.2	3.2	3.8	3.1	8.6	10.3	5.4	9.1	5.7	0.2	1.3	0.9			3.8		1.2	1.0	1.0
CHEMISTRY	N	2890	59	8	28	4	451	4	648	4092	293	2					90		63	449	
	H	70.6	1.4	0.2	0.7	0.1	13.0	0.1	15.8	100.0	63.3	0.2					20.0		14.0	100.0	100.0
	V	6.0	3.5	2.8	4.8	4.3	10.6	5.9	5.8	6.2	2.4	0.3	1.0				14.1		2.7	2.8	2.8
EARTH SCIS	N	987	7	8	10	3	89	2	245	1351	52						3.2		10	65	
	H	73.1	0.5	0.8	1.7	0.3	6.6	0.2	18.1	100.0	80.0						3.3		15.4	100.0	100.0
	V	2.1	0.4	2.8	1.7	3.2	2.1	2.9	2.1	2.0	0.4		1.3				3.3		0.4	0.4	0.4
ENGINEERING	N	4545	70	18	48	11	1314	21	1607	7634	64						14		19	97	
	H	59.5	0.9	0.4	0.6	0.1	17.2	0.3	21.1	100.0	66.0						14.4		19.8	100.0	100.0
	V	9.5	4.1	6.4	8.3	11.7	30.8	30.9	14.0	11.9	0.5						2.2		0.8	0.6	0.6
EMP TOTAL	N	12655	189	52	129	25	2484	38	3555	19127	706						181		151	1252	
	H	66.2	1.0	0.3	0.7	0.1	13.0	0.2	18.6	100.0	67.1						28.5		14.4	100.0	100.0
	V	26.3	11.2	18.4	22.2	26.6	58.2	55.9	31.0	28.8	5.9	1.4	3.9	1.9			33.3		6.5	6.7	6.7
AGRIC SCIS	N	1627	64	7	46	3	308	6	435	2496	63						30		17	111	
	H	65.2	2.6	0.3	1.8	0.1	12.3	0.2	17.4	100.0	56.8						27.0		15.3	100.0	100.0
	V	3.4	3.8	2.5	7.9	3.2	7.2	8.8	3.8	3.8	0.5						4.7		0.7	0.7	0.7
MEDICAL SCIS	N	763	27	4	12	2	104	3	245	1160	208						26		46	285	
	H	65.8	2.3	0.3	1.0	0.1	9.0	0.2	21.1	100.0	73.0						9.1		18.1	100.0	100.0
	V	1.6	1.6	1.4	2.1	2.1	2.4	4.4	2.1	1.7	1.7	1.1					4.1		2.0	1.8	1.8
BIOSCIENCES	N	4777	107	26	69	10	458	3	1164	6614	1310						42		262	1776	
	H	72.2	1.6	0.4	1.0	0.2	10.9	0.1	17.6	100.0	73.8						2.4		14.8	100.0	100.0
	V	9.9	6.3	9.2	11.9	10.6	10.9	4.4	10.1	9.9	10.9	7.1	11.7	8.5	6.7	22.2	11.3		11.3	11.2	11.2
LIFE SCI TOT	N	7167	198	37	127	15	870	12	1844	10270	1581						46		325	2172	
	H	69.8	1.9	0.4	1.2	0.1	8.5	0.2	18.0	100.0	72.8						2.1		15.0	100.0	100.0
	V	14.9	11.9	13.1	21.9	16.0	20.4	17.6	16.1	15.4	13.1	7.8	11.7	9.4	15.0	30.9	16.0		16.0	13.7	13.7
PSYCHOLOGY	N	3647	82	23	30	10	49	1	668	4510	1548						37		296	1931	
	H	80.9	1.8	0.5	0.7	0.2	1.1	1.5	14.8	100.0	40.2						1.9		15.3	100.0	100.0
	V	7.6	4.9	8.2	5.2	10.6	1.1	1.5	5.8	6.8	12.9	6.3	7.8	8.5	6.7	5.0	16.7		12.8	12.2	12.2
SOCIAL SCIS	N	5280	192	29	52	8	350	5	1376	7292	1207						36		200	1516	
	H	72.4	2.6	0.4	0.7	0.1	4.8	0.2	18.9	100.0	76.6						2.4		13.2	100.0	100.0
	V	11.0	11.4	10.3	9.0	8.5	8.2	7.4	12.0	11.0	10.0	6.1	6.3	8.5	23.3	8.0	16.7		8.6	9.6	9.6
BEHAV SC TOT	N	8927	274	52	82	18	399	6	2044	11802	2755						73		496	3447	
	H	75.2	2.3	0.4	0.7	0.2	3.4	0.1	17.3	100.0	79.9						2.1		14.4	100.0	100.0
	V	18.6	16.2	18.4	14.1	19.1	9.3	8.8	17.8	17.7	22.9	12.3	14.3	17.0	32.0	13.0	33.3		21.4	21.8	21.8
HUMANITIES	N	6988	153	46	107	16	186	4	1408	8906	3065						67		572	3842	
	H	78.5	1.7	0.5	1.2	0.2	2.1	0.1	15.8	100.0	79.8						1.7		14.9	100.0	100.0
	V	14.5	9.1	16.3	18.4	17.0	4.4	5.9	12.2	13.4	25.5	11.3	23.4	44.3	26.7	10.0	16.7		24.7	24.3	24.3
PROFESSIONS	N	2331	55	7	13	2	109	2	589	3108	362						24		86	490	
	H	75.0	1.8	0.2	0.4	0.1	3.5	0.2	19.0	100.0	73.9						4.9		17.6	100.0	100.0
	V	4.9	3.3	2.5	2.2	2.1	2.9	2.9	5.1	4.7	3.0	4.1	1.3	0.9			2.5		3.7	3.1	3.1
EDUCATION	N	9942	818	88	122	18	220	6	2044	13278	3574						35		486	4807	
	H	75.0	4.2	0.7	1.9	0.1	1.7	0.1	15.4	100.0	74.3						7.8		14.3	100.0	100.0
	V	20.7	48.5	31.2	21.0	19.1	3.2	8.8	17.8	20.0	29.7	63.2	45.5	27.4	33.3	15.3	16.7		29.6	30.4	30.4
NON-SCI TOT	N	19281	1026	141	242	36	515	12	4039	25292	7001						465		1344	9139	
	H	76.2	4.1	0.6	1.0	0.1	2.0	0.2	16.0	100.0	76.4						5.1		14.9	100.0	100.0
	V	40.1	60.8	50.0	41.7	38.3	12.1	17.6	35.2	38.0	58.1	78.3	70.1	72.6	60.0	27.8	33.3		58.0	57.8	57.8
GRAND TOTAL	N	48030	1687	282	580	94	4268	68	11682	66491	12043						592		2316	15810	
	H	72.2	2.5	0.9	1.2	0.2	2.0	0.1	17.3	100.0	76.2						3.7		14.6	100.0	100.0
	V	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

*N = number of individuals; H = horizontal percentage; V = vertical percentage.

SOURCE: NRC, Commission on Human Resources.

Source: A Century of Doctorates, National Research Council, 1978, p. 50.

the 2,112 Ph.D.'s produced between 1973 and 1976 in this subfield, only 152, or 7.2 percent, of which were women and only 33, or 1.7 percent, of which were black. Such small figures in other subspecialties in the "hard" sciences are not uncommon. As faculty size contracts, and if the demand for faculty becomes even more specialized, there may not be enough of "exactly the right type" of women and/or minorities to fulfill the specialized needs of institutions even as the number of women is growing.

Traditionally, with the exception of a few fields, such as chemistry, the majority of this nation's doctorates have been employed in the academic world; this is no longer as true as it once was. For most fields, the percentage of Ph.D.'s in academic positions reached a peak in the late 1960s and has dropped since then. Table 16 notes this general trend.

Table 16

PERCENTAGE OF Ph.D.'s ENTERING EMPLOYMENT,
BY FIELD AND SEX, WHO TAKE ACADEMIC JOBS
IN EACH OF FIVE COHORTS FROM 1960 TO 1974*

	Men					Women					Both Sexes Combined							
Field of Doctorate	1960-1964	1965-1968	1969-1970	1971-1972	1973-1974	Total, 1960-1974	1960-1964	1965-1968	1969-1970	1971-1972	1973-1974	Total, 1960-1974	1960-1964	1965-1968	1969-1970	1971-1972	1973-1974	Total, 1960-1974
Mathematics	68.6	74.5	81.8	81.7	72.7	75.9	78.1	78.7	95.7	84.6	74.9	81.0	69.2	74.7	82.7	81.9	72.9	76.3
Physics	48.1	47.6	41.9	45.5	31.7	45.4	51.2	58.0	70.0	68.6	51.0	59.7	48.4	47.9	44.6	46.2	34.4	45.7
Chemistry	22.9	26.0	29.7	35.7	21.9	26.6	39.7	45.4	62.6	61.0	37.0	48.4	23.7	27.2	32.2	37.8	25.2	28.1
Earth sciences	38.5	45.8	52.3	51.6	41.8	45.4	50.0	50.0	56.0	73.7	59.0	57.7	38.7	45.9	52.4	52.1	42.7	45.7
Engineering	19.7	34.3	32.6	32.0	25.6	33.2	31.0	24.1	54.2	54.5	51.6	45.7	39.7	34.2	32.7	32.1	26.0	33.3
EMP TOTAL	40.1	41.2	42.3	44.3	35.9	40.9	51.3	55.9	73.4	70.9	56.7	61.0	40.4	41.6	41.3	45.3	37.0	41.6
Agricultural sciences	41.5	44.3	50.7	54.5	49.7	49.5	42.3	41.9	61.5	71.9	60.3	58.3	41.5	44.2	59.7	55.0	50.1	49.7
Medical sciences	47.2	47.5	58.4	60.8	51.8	52.7	50.0	59.0	69.8	64.9	65.6	63.2	47.4	48.7	60.0	61.4	56.5	54.0
Biological sciences	56.0	58.5	70.7	65.6	57.3	60.8	66.1	61.8	77.5	71.9	66.2	68.1	57.2	59.0	71.7	67.1	58.8	61.9
LIFE SCIENCE TOTAL	51.2	53.2	65.7	61.2	54.2	56.3	61.8	60.9	75.5	72.7	65.6	66.9	52.3	54.1	66.7	62.6	55.8	57.5
Psychology	46.4	50.0	61.4	56.9	48.7	54.4	47.0	48.0	55.7	54.7	49.4	50.9	46.5	55.8	61.5	56.3	48.9	51.5
Economics	82.1	84.5	77.0	72.0	69.2	68.0	59.3	62.5	72.7	71.0	77.6	69.2	62.0	64.4	76.7	71.9	69.8	68.1
Other social sciences	71.6	78.0	85.9	85.6	78.8	80.2	66.3	77.6	87.1	81.9	80.5	79.7	71.1	77.9	86.0	85.0	79.1	80.2
BEHAVIORAL SCIENCE TOTAL	59.0	67.2	75.8	73.1	66.3	68.1	51.4	58.7	67.0	66.6	61.5	62.4	58.1	66.0	74.4	71.9	65.7	67.1
SCIENCE TOTAL	47.4	50.0	56.3	57.0	50.4	51.8	56.0	58.8	70.3	68.7	62.9	63.3	48.0	50.6	57.4	58.2	52.2	52.9
Humanities	87.2	88.6	94.1	91.1	80.6	88.2	84.0	84.2	91.4	89.5	79.6	85.3	86.7	87.7	91.4	90.7	80.3	87.6
Professions	88.1	73.8	84.1	75.8	75.9	66.2	66.9	72.1	80.4	72.4	79.1	74.2	67.9	73.6	81.6	78.8	76.3	76.0
Education	56.8	61.0	67.5	60.1	47.6	58.6	64.2	66.3	74.1	68.4	59.2	65.8	58.2	62.0	68.8	62.0	50.7	60.1
NONSCIENCE TOTAL	70.3	73.3	78.7	72.9	62.4	71.5	71.8	74.1	81.7	76.9	68.5	74.2	70.5	71.5	79.1	73.8	64.0	72.0
GRAND TOTAL	55.5	58.7	65.3	61.9	55.8	59.7	65.7	68.3	77.6	74.1	66.5	70.2	56.6	59.8	67.0	65.6	58.0	61.2

* This table excludes postdoctorate and those without definite plans.

SOURCE: NRC, Commission on Human Resources.

Source: A Century of Doctorates, NRC, 1978, p. 79.

However, this trend is not as pronounced for women as it is for men, despite the concentration of women into non-science fields which have been in a period of retrenchment for a decade. In 1973-74, 66.5 percent of all new female doctorates, but only 55.8 percent of the men, entered academic employment. Clearly, institutions of higher education responded, beginning in the early 1970s, to federal and social pressures to hire new women Ph.D.'s.

However, Table 17 dramatically points out that academia faces increasing competition from other sectors of society for the burgeoning group of credentialed women. The Engineering-Mathematics-Physical Sciences category provides an interesting example: academia's share of women Ph.D.'s jumped during the early years of this decade while the men's share remained fairly constant. Since 1972, academia has lost a significant percentage of both sexes to other sectors of society, particularly business and industry.

But, the rate of increase in industrial and post-doctoral appointments for women has been greater than that of their male colleagues. Thus, although it still appears women seek teaching jobs more frequently than men, academia is beginning to lose its competitive edge. Data on salary equalization presented later in this paper will speak to this point. Still, however, women Ph.D.'s generally show similar employment preferences to the men.

Like their male colleagues, women with Ph.D.'s in the arts and humanities face an uncertain future. If student-faculty ratios and interinstitutional mobility and tenure patterns remain unchanged over the next decade, the proportion of new Ph.D.'s taking college teaching positions, as high as 65 percent in the late 1960s, will drop to below 15 percent of the total doctorates produced annually in this country.¹² This shortfall of academic openings will be felt most severely in the arts and humanities, areas in which academia has employed over 80 percent of the new doctorates as late as 1974. These fields

Men					Women					Total							
1960-1964	1965-1968	1969-1970	1971-1972	1973-1974	1960-1964	1965-1968	1969-1970	1971-1972	1973-1974	1960-1964	1965-1968	1969-1970	1971-1972	1973-1974			
68.6	74.5	81.8	81.7	72.7	75.9	78.1	78.7	95.7	84.6	74.9	81.8	69.2	74.7	82.7	81.9	72.9	76.3
14.1	11.1	11.7	8.8	13.4	11.7	5.3	3.0	2.2	5.1	8.4	5.0	13.6	10.6	11.0	8.5	12.8	11.2
3.4	2.8	2.0	3.8	4.3	3.2				1.9	3.0	1.3	3.2	2.6	1.9	3.7	4.2	3.1
2.3	1.9	2.3	3.4	1.3	1.8				1.5	1.5	1.1	2.8	1.9	1.3	1.1	1.3	1.2
100.8	9.7	2.1	1.4	1.1	1.8	1.8			6	7.7	11.8	10.6	11.0	10.1	2.1	4.6	7.4
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
48.3	47.6	43.9	55.5	33.7	45.4	51.0	58.0	68.6	51.0	59.7	48.4	47.9	44.6	46.2	30.4	45.7	45.7
25.8	23.3	31.7	21.6	31.2	25.8	14.2	7.5	6.0	7.8	17.6	9.2	22.9	31.0	21.1	30.7	25.3	25.3
8.0	10.8	9.7	17.0	18.8	11.4	4.7	4.5	4.0	5.9	5.9	4.9	8.0	9.6	16.6	16.4	11.3	11.3
5.0	3.2	3.6	2.9	2.9	3.9							10.6	1.8	3.1	2.8	2.8	2.8
13.2	14.9	8.3	12.8	15.0	13.1	30.2	33.0	16.0	4.0	25.4	25.4	13.5	15.3	8.5	12.9	15.5	13.4
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
22.9	26.0	29.7	35.7	23.9	26.6	39.7	45.4	62.6	61.0	37.0	48.4	21.7	27.2	32.2	37.8	25.2	28.1
58.9	56.5	59.8	45.0	39.7	56.6	27.4	20.9	20.0	19.3	38.2	24.8	37.3	59.9	56.8	42.8	58.6	54.4
4.0	4.1	3.5	6.2	4.3	5.2	6.4	2.1	4.2	4.5	3.6	4.1	4.1	3.9	3.6	5.1	4.4	4.4
1.3	1.4	1.8	1.9	1.0	1.7			1.1			1.3	1.3	1.7	1.7	1.0		
2.3	1.7	2.2	2.0	1.8	2.0	2.3	2.8	2.1	1.9	1.8	2.3	2.3	1.7	2.2	2.0	1.8	2.0
11.5	11.4	6.0	9.2	9.3	6.7	24.2	28.7	10.0	13.0	18.8	20.0	12.2	12.3	12.3	9.5	10.3	10.4
100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
38.5	45.8	52.3	51.6	41.8	45.4	50.0	50.0	56.0	73.7	59.0	57.7	38.7	45.9	52.4	52.1	42.7	45.7
23.1	21.7	22.2	21.6	22.2	22.9	3.6		4.0	10.5	20.5	9.8	22.8	21.4	24.5	21.4	22.6	22.6
14.1	13.1	9.4	11.9	14.6	12.8	21.4		16.0	10.5		9.8	14.8	13.2	9.7	11.8	13.9	12.7
3.4	2.1	3.4	3.6	4.7	3.0			8.0			1.6	2.4	2.1	3.6	3.5	4.4	4.4
1.1	2.0	2.3	1.6	1.7	1.2	50.0	25.0	8.0		2.6	1.4	3.0	1.6	2.6	9.5	1.	

Table 17 (continued)

	Men					Women					Total					Total				
	Total					Total					Total					Total				
	1960-1964	1965-1968	1969-1970	1971-1972	1973-1974	1960-1964	1965-1968	1969-1970	1971-1972	1973-1974	1960-1964	1965-1968	1969-1970	1971-1972	1973-1974	1960-1964	1965-1968	1969-1970	1971-1972	1973-1974
ECON & METRIC																				
COLL/UNIV	62.1	64.5	77.0	72.0	69.2	68.0	59.3	62.5	72.7	71.0	77.6	69.2	62.0	64.4	76.7	71.9	69.8	68.1	68.1	68.1
BUS/IND	5.9	5.0	5.2	6.0	6.5	5.7	2.3	5.4	5.7	5.1	3.2	5.0	5.8	5.0	5.2	5.8	5.0	5.0	5.0	5.0
U.S. GOVT	8.6	7.3	5.3	8.0	8.0	7.5	9.3	8.0	6.8	5.6	8.8	7.7	8.6	7.3	5.4	7.8	8.0	7.5	7.5	7.5
US ST/LOC GOV	4.9	3.7	1.7	1.2	1.2	1.3	1.2	1.3	2.3	1.8	1.8	1.8	1.0	1.7	1.9	1.1	1.1	1.3	1.3	1.3
NON-PROFIT	4.1	3.6	4.7	4.2	3.9	4.0	1.0	9	5.8	7.3	6.4	5.7	4.3	3.4	4.8	4.3	4.3	4.1	4.1	4.1
OTHER OR UNK	18.3	18.9	5.9	8.6	10.3	13.5	20.9	23.2	8.7	7.3	7.2	12.5	18.4	10.1	5.9	8.5	10.0	13	13	13
TOTAL ENPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
OTHER SOC SCIS																				
COLL/UNIV	71.6	78.0	85.9	85.6	78.8	80.2	66.3	77.6	87.1	81.9	80.5	79.7	71.1	77.9	86.0	85.0	79.1	80.2	80.2	80.2
BUS/IND	1.8	1.8	3.2	2.1	2.9	2.4	1.0	1.0	1.9	1.1	1.3	1.3	1.3	1.7	3.0	2.0	2.6	2.9	2.9	2.9
U.S. GOVT	5.4	3.0	1.8	2.6	3.1	3.1	2.9	2.2	2.7	1.7	2.0	2.5	3.1	2.9	1.7	2.9	2.9	2.9	2.9	2.9
US ST/LOC GOV	2.0	1.7	1.9	1.6	2.9	2.0	3.8	1.0	2.4	3.2	2.3	2.5	2.2	1.6	2.0	1.9	2.8	2.1	2.1	2.1
NON-PROFIT	3.5	2.9	3.0	2.9	3.5	3.2	3.4	1.9	5.6	4.5	4.1	4.1	3.7	3.6	6.3	6.0	7.7	6.5	6.5	6.5
OTHER OR UNK	15.3	12.6	4.2	8.7	9.1	20.5	14.9	6.3	7.8	9.8	10.6	10.6	10.6	10.6	6.3	6.3	6.3	6.3	6.3	6.3
TOTAL ENPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
BEHAV SC TOT																				
COLL/UNIV	59.0	67.2	75.8	73.1	66.3	68.1	53.4	58.7	67.0	66.6	63.5	62.4	58.3	66.0	74.4	71.9	65.7	67.1	67.1	67.1
BUS/IND	2.0	2.0	3.1	4.4	4.6	3.2	1.2	1.9	3.4	3.0	3.0	3.0	3.0	3.0	4.0	4.0	3.8	3.8	3.8	3.8
U.S. GOVT	8.1	5.0	3.1	4.4	4.6	3.2	1.2	1.9	3.4	3.0	3.0	3.0	3.0	3.0	4.0	4.0	3.8	3.8	3.8	3.8
US ST/LOC GOV	6.4	5.3	5.6	6.4	6.8	6.1	7.9	7.4	10.2	7.5	8.5	8.3	6.6	6.3	6.6	6.6	7.7	6.5	6.5	6.5
NON-PROFIT	6.0	5.0	5.3	5.4	7.1	5.8	2.2	8.4	8.9	8.3	9.1	8.8	6.4	5.5	6.1	5.9	7.7	6.5	6.5	6.5
OTHER OR UNK	15.5	13.7	2.5	7.4	10.7	10.8	23.0	19.9	9.7	12.3	13.8	13.8	13.8	13.8	6.1	6.1	11.4	11.4	11.4	11.4
TOTAL ENPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
SCIENCE TOTAL																				
COLL/UNIV	47.4	50.0	56.1	57.0	50.4	51.8	56.0	58.8	70.3	68.7	62.9	63.3	48.0	50.6	57.4	58.2	52.2	52.9	52.9	52.9
BUS/IND	23.8	23.3	26.1	19.7	23.5	23.3	5.3	4.5	4.3	4.1	5.9	4.8	22.5	21.9	24.6	24.6	21.1	21.6	21.6	21.6
U.S. GOVT	7.0	6.8	5.1	7.7	7.3	6.8	4.9	3.7	2.8	3.5	3.5	3.6	6.9	6.6	4.9	3.9	3.8	6.5	6.5	6.5
US ST/LOC GOV	2.3	1.9	2.8	3.1	3.6	3.6	4.5	4.2	6.7	5.0	6.2	4.3	2.5	3.2	3.2	3.3	3.9	4.1	4.1	4.1
NON-PROFIT	3.9	3.4	3.8	3.5	4.6	3.8	6.7	6.3	6.4	6.8	7.1	6.7	4.1	5.9	4.1	3.9	4.9	4.1	4.1	4.1
OTHER OR UNK	15.6	14.6	6.0	8.9	10.6	11.7	22.6	20.3	8.5	11.8	12.3	13.8	13.8	13.8	6.1	6.1	11.4	11.4	11.4	11.4
TOTAL ENPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
HUMANITIES																				
COLL/UNIV	87.2	88.6	94.1	91.1	80.6	88.2	84.0	84.2	91.4	89.5	79.6	85.3	86.7	87.7	93.4	90.7	80.3	87.6	87.6	87.6
BUS/IND	1.8	1.8	1.8	1.8	2.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
U.S. GOVT	1.3	1.3	1.3	1.3	1.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
US ST/LOC GOV	1.3	1.3	1.3	1.3	1.4	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
NON-PROFIT	1.7	1.5	1.3	1.4	2.8	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7
OTHER OR UNK	8.7	8.0	1.3	5.2	12.6	13.3	13.8	13.8	6.8	9.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8	13.8
TOTAL ENPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
PROFESSIONS																				
COLL/UNIV	68.1	73.8	84.1	79.8	75.9	76.2	66.9	72.1	80.4	72.4	79.3	74.2	67.9	73.6	83.6	78.8	76.3	76.0	76.0	76.0
BUS/IND	4.4	5.0	4.6	5.2	6.0	5.1	2.7	1.5	1.2	1.2	1.2	1.2	4.0	4.6	4.2	4.9	3.4	4.6	4.6	4.6
U.S. GOVT	1.3	1.1	1.9	2.5	2.8	1.9	2.5	1.5	1.2	1.2	1.2	1.2	1.5	1.1	1.2	2.4	2.8	1.9	1.9	1.9
US ST/LOC GOV	1.5	1.1	1.7	1.1	1.1	1.1	2.5	1.2	4.6	2.1	2.9	2.1	1.8	1.8	1.2	1.2	1.1	1.0	1.0	1.0
NON-PROFIT	11.3	7.4	4.6	7.6	9.6	8.1	6.5	5.0	3.4	8.6	7.1	6.6	10.7	7.2	4.3	4.9	3.3	7.9	7.9	7.9
OTHER OR UNK	18.4	12.4	6.7	6.0	4.6	4.6	20.9	18.8	6.6	11.0	8.6	13.0	13.0	12.8	4.3	4.9	3.3	8.5	8.5	8.5
TOTAL ENPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
EDUCATION																				
COLL/UNIV	56.8	61.0	67.5	60.1	47.6	58.6	64.2	66.1	74.1	68.4	59.2	65.8	58.2	62.0	68.8	62.0	50.7	60.1	60.1	60.1
BUS/IND	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8
U.S. GOVT	1.3	1.0	1.9	1.4	1.8	1.3	1.6	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
US ST/LOC GOV	3.7	3.3	5.5	5.9	8.4	5.4	2.7	2.4	4.1	4.2	3.7	3.0	4.0	3.2	3.2	3.2	3.5	3.1	3.1	3.1
NON-PROFIT	2.8	3.1	2.9	3.6	4.1	3.3	3.3	3.5	3.8	3.8	3.7	3.0	3.7	3.0	3.0	3.0	3.7	3.7	3.7	3.7
OTHER OR UNK	34.6	30.6	22.3	28.0	36.8	30.5	28.9	26.3	16.5	22.2	28.7	24.8	35.4	29.8	21.1	23.9	34.7	20.2	20.2	20.2
TOTAL ENPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
NON-SCI TOT																				
COLL/UNIV	70.3	73.3	78.7	72.9	62.4	71.5	71.8	74.1	81.7	76.9	68.5	74.2	70.5	73.5	79.3	73.8	64.0	72.0	72.0	72.0
BUS/IND	1.2	1.3	1.3	1.5	2.1	1.5	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
U.S. GOVT	1.3	1.0	1.9	1.4	1.8	1.3	1.6	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.1
US ST/LOC GOV	2.0	1.9	3.1	3.5	4.9	3.0	1.7	1.5	2.6	2.4	3.4	3.4	1.9	1.8	3.0	3.3	4.5	2.5	2.5	2.5
NON-PROFIT	3.4	3.0	2.6	3.4	4.2	3.3	3.0	2.9	2.6	2.4	2.9	2.9	3.3	3.0	2.6	3.3	3.9	3.2	3.2	3.2
OTHER OR UNK	21.9	19.6	13.4	17.4	24.6	19.4	22.5	20.1	11.8	15.9	22.6	18.7	22.0	19.7	13.1	17.1	24.9	19.3	19.3	19.3
TOTAL ENPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
GRAND TOTAL																				
COLL/UNIV	55.5	58.7	65.3	63.9	55.8	59.7	65.7	68.3	77.6	74.1	66.5	70.2	56.6	59.8	67.0	65.6	58.0	61.2	61.2	61.2
BUS/IND	15.8	15.1	16.1	11.7	13.9	14.6	2.2	2.1	1.9	1.9	3.1	2.3	14.3	13.5	14.1	10.1	11.7	12.8	12.8	12.8
U.S. GOVT	5.0	4.6	3.4	4.9	4.8	4.6	2.3	1.9	1.5	1.9	2.0	2.0	4.7	4.3	3.1	4.4	4.3	4.2	4.2	4.2
US ST/LOC GOV	2.6	1.9	2.9	3.3	4.2	2.8	2.8	2.5	4.0	3.3	4.4	3.3	2.3	2.0	3.1	3.3	4.2	2.9	2.9	2.9
NON-PROFIT	3.2	3.2	3.3	3.5	4.4	3.6	4.4	3.7	3.9	4.3	4.4	3.7	3.8	3.4	3.4	3.4	4.6	3.2	3.2	3.2
OTHER OR UNK	17.8	16.2	9.0	12.7	16.9	14.8	22.4	21.0	11.0	15.5	19.6	17.8	17.8	17.0	9.3	13.0	17.4	15.2	15.2	15.2
TOTAL ENPL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

also apparently offer fewer attractive job alternatives outside higher education. It will be interesting to see if women will pursue graduate study in these fields in smaller numbers in the future, and thereby follow the message of the job market as men have for the past several years.

Table 18 presents a summary of the changing position of the women in the professoriate. Since reliable aggregate data does not exist prior to 1972, it is difficult to reconstruct a detailed analysis of the number of faculty women over a long period of time; however, periodic surveys do suggest that the number of full-time female faculty has grown steadily only since the early years of the 1970s. In 1962, women constituted 19.0 percent of the faculty, a figure first reached in 1910; even after a decade of progress, women still have not surpassed the 32.0 percent share of the professoriate women represented in 1930.¹³

TABLE 18

THE PERCENTAGE OF WOMEN IN THE PROFESSORiate,
1963, 1968, 1972, and 1977

	<u>Professor</u>	<u>Associate Professor</u>	<u>Assistant Professor</u>	<u>Instructor/ Lecturer</u>
<u>1963</u>				
All Institutions	7.8	15.1	20.7	29.2
Universities	3.8	10.7	16.0	28.8
<u>1968</u>				
All Institutions	9.0	15.0	21.0	33.0
Universities	5.0	10.0	15.0	29.0
<u>1972</u>				
All Institutions	9.8	16.3	23.0	40.0
Universities	6.3	12.5	19.8	43.7
<u>1977</u>				
All Institutions	8.7	18.0	31.7	49.1
Universities	5.9	14.4	28.7	49.0

Source: 1963, 1972, and 1977 data; National Center for Educational Statistics: 1968 data from the 1969 Carnegie Faculty Sample.

Table 19 gives an accurate picture of the steady progress made from 1972 to the present.

Table 19

HISTORICAL SUMMARY OF
U.S. FACULTY IN HIGHER EDUCATION BY SEX,
1972-73 TO 1977-78

YEAR	Total Institutions	Total Faculty	Men	Women	% Women
1972-73	2,665	343,645	266,034	77,611	22.6
1974-75	2,763	369,442	281,422	88,021	23.8
1975-76	3,055	377,157	285,572	91,585	24.3
1976-77	N.A.	378,513	283,888	94,625	25.0
1977-78 ³	N.A.	301,408	224,574	76,834	25.5

Note:

Total numbers in 1977-78 are for full-time instructional faculty on 9-10 month contracts. Data for 1972-73 thru 1976-77 are for all full time instructional staff.

Sources: Digest of Education Statistics, Series 1973 thru 1977-78 editions and Press Releases from the National Center for Education Statistics.

Table 20 presents the sex and ethnic composition of American faculty, by rank, for 1976. Whereas in 1970, 75.3 percent of the professoriate was white and male, by 1976, that number had been reduced to 70.0 percent. The greatest increase in the number of women came in the lower ranks: women constituted 28.2 percent of the assistant professors, a figure slightly higher, as we have seen, than the percentage of women doctorates produced in this decade. Blacks, too, appear to be slightly "over-represented" in this way. But, the professoriate, particularly at the higher ranks, remains overwhelmingly white and male.

Table 20
SEX AND RACIAL/ETHNIC COMPOSITION
OF FULL-TIME FACULTY¹
IN INSTITUTIONS OF HIGHER EDUCATION,
BY RANK: 1976

Rank	Male							Female					
	Total	Total	White ²	Black ²	Asian/ Pacific Islander	Hispanic	American Indian/ Alaskan Native	Total	White ²	Black ²	Asian/ Pacific Islander	Hispanic	American Indian/ Alaskan Native
TOTAL ¹	446,034	336,216	312,281	10,791	7,798	4,534	812	109,818	97,131	8,783	1,889	1,741	274
Percent	100.0	75.4	70.0	2.4	1.7	1.0	0.2	24.6	21.8	2.0	0.4	0.4	(*)
Professors:													
Number	98,028	88,656	84,423	1,637	1,087	655	134	9,372	8,623	501	128	102	18
Percent	100.0	90.4	86.1	1.7	1.8	0.7	(*)	9.6	8.8	0.5	0.1	0.1	(*)
Associate Professors:													
Number	99,592	82,787	77,744	1,941	2,042	903	157	16,805	15,235	999	271	265	35
Percent	100.0	83.1	78.1	1.9	2.1	0.9	0.2	16.9	15.3	1.0	0.3	0.3	(*)
Assistant Professors:													
Number	121,176	86,978	80,003	3,242	2,203	1,299	201	34,198	30,471	2,591	590	486	60
Percent	100.0	71.8	66.1	2.7	1.8	1.1	(*)	28.2	25.1	2.1	0.5	(*)	(*)

¹ Includes both 9-10 and 11-12 month contract faculty who teach full-time.

² Non-Hispanic.

³ Includes full-time faculty at all ranks including instructors and others.

⁴ Less than 0.1 percent.

NOTE: Detail may not add to total because of rounding.

SOURCE: Equal Employment Opportunity Commission, unpublished data.

Considerable progress has been made at the lower levels; this reflects women's growing share of doctorates. However, the data does indicate that women are not as well represented in the highest ranks of academia. Three demographic considerations are paramount: first, the vast majority of academic women have not been in the labor force long enough to qualify for the professor rank; second, most of those who have come that far "through the pipeline" are in the non-science fields which have had few openings in recent

years at the highest ranks; and, third, there is a relatively high percentage of women professors who received their doctorates in the 1930s and who are now retiring at a time when, as we have just seen, conditions have limited the ability of colleges and universities to replace them. Table 21 describes these trends. Table 21 is revealing for a number of other reasons as well. It points out that universities have a lower percentage of women faculty than other types of institutions. It also suggests that there is little difference between the public and private sectors in the percentage of women faculty at all levels and types of institutions.

Much of the controversy concerning women in academia has focused on the tenure process. Table 22 shows that at the highest ranks, men have tenure at a higher rate than their female colleagues; this is not the case, however, at the level of assistant professor, where a larger percentage of women than men have tenure. Women's groups are not encouraged by these figures: they believe affirmative action programs have failed to increase sufficiently the number of women into the highest ranks of the professoriate. Many contend that

once on the faculty, women experience a second barrier to equality with men: the academic reward system is biased toward behaviors and activities exhibited more often by men than women.¹⁴

Helen Astin and others have described how a tenure process based primarily on publications can "discriminate" against women, who traditionally have greater interest in, and responsibilities for, teaching. Even so, if research activity is held constant, a Carnegie Commission study suggests that men receive tenure more quickly than women.¹⁵

Barbara Reagan, in a paper on "Stocks and Flows of Academic Economists," concludes that the evidence of affirmative action is sparse at the critical promotion points in her field: "The entry door at the assistant professor level is still narrow for women, and the revolving door syndrome is working too well for many women economists at the assistant professor

Table 21

WOMEN AS A PERCENT OF TOTAL FULL-TIME INSTRUCTIONAL FACULTY
ON 9-MONTH CONTRACTS IN INSTITUTIONS OF HIGHER EDUCATION
BY ACADEMIC RANK AND LEVEL OF INSTITUTIONAL UNIT,
1972-73 - 1977-78

Academic Rank and year	Institutions	P U B L I C				P R I V A T E			
		Total	Univ.	4-year Inst.	2-year Inst.	Total	Univ.	4-year Inst.	2 year Inst.
ALL RANKS									
1972-73	22.3	22.7	17.1	23.2	32.3	21.2	14.5	23.6	45.4
1974-75	24.1	24.8	19.3	24.4	32.7	23.5	16.3	25.6	44.1
1976-77	25.2	25.7	18.9	24.6	34.4	23.7	17.0	26.0	42.4
1977-78	25.2	25.6	18.7	24.6	34.5	24.1	16.9	26.4	44.8
PROFESSORS									
1972-73	9.8	10.0	6.7	12.7	21.2	9.5	5.4	12.3	31.5
1974-75	10.3	10.5	6.6	12.7	24.7	10.1	5.6	13.0	26.6
1976-77	9.6	9.7	6.2	11.8	20.8	9.2	5.6	12.0	26.4
1977-78	9.7	9.7	5.9	11.6	22.1	9.7	5.5	12.6	29.4
ASSOCIATE PROF.									
1972-73	16.3	15.8	12.3	17.4	24.3	17.2	12.9	19.1	34.3
1974-75	16.9	16.1	13.3	17.0	24.7	18.6	13.5	20.8	26.6
1976-77	17.6	17.3	13.8	17.7	26.6	18.3	14.4	20.0	28.5
1977-78	17.8	17.4	13.6	17.7	27.5	18.7	14.7	20.3	30.8
ASSISTANT PROF.									
1972-73	23.8	23.7	20.0	24.7	31.3	24.1	19.0	25.7	41.3
1974-75	27.1	27.0	24.4	27.6	33.8	27.3	22.4	28.7	43.2
1976-77	30.3	30.4	27.6	30.7	35.8	30.1	26.2	31.4	46.0
1977-78	31.5	31.5	28.7	31.7	36.5	31.5	27.5	32.8	51.8
INSTRUCTORS									
1972-73	39.9	39.2	44.4	44.0	35.1	42.5	41.0	41.5	53.8
1974-75	40.6	39.4	49.6	47.7	34.2	46.5	44.8	46.2	51.0
1976-77	50.6	51.1	53.8	51.5	48.1	49.5	48.6	49.0	59.4
1977-78	49.9	50.1	54.0	52.7	44.0	49.4	44.4	50.0	57.2
LECTURERS									
1972-73	34.9	35.1	30.3	40.2	51.2	34.2	29.1	38.1	52.9
1974-75	39.8	39.5	36.3	43.8	50.0	40.5	35.9	46.2	91.7
1976-77	40.8	41.1	40.9	39.7	54.6	39.6	36.3	43.6	87.5
1977-78	42.8	42.5	41.8	43.4	42.5	43.6	42.9	40.6	95.7
NO ACADEMIC RANK									
1972-73	32.8	32.3	23.4	38.8	32.4	34.7	10.0	30.1	40.6
1974-75	34.3	34.0	39.1	39.9	33.7	35.5	10.0	30.8	44.5
1976-77	34.8	34.5	53.1	46.5	34.2	37.6	42.7	35.1	40.2
1977-78	34.6	34.5	35.1	39.4	34.5	35.3	33.8	29.5	42.3

Source: Professional Women and Minorities, p. 82.

Table 22

FACULTY IN INSTITUTIONS OF HIGHER EDUCATION,
BY CONTROL AND TYPE OF INSTITUTION
AND BY TENURE STATUS AND SEX OF FACULTY:
1976-77

Type of institution	Public					Private				
	With tenure					With tenure				
	Total	Number	Percent			Total	Number	Percent		
			Total	Males	Females			Total	Males	Females
All institutions	284,302	166,168	58.4	53.1	44.7	102,576	52,224	50.9	56.3	33.8
Professor	62,068	58,067	93.6	93.7	92.3	27,642	25,447	92.1	92.5	88.1
Associate professor	65,574	54,469	83.1	83.4	81.7	25,862	18,840	72.8	73.2	71.2
Assistant professor	73,522	23,919	32.5	30.8	36.5	31,364	6,426	20.5	19.9	21.8
Instructor	26,118	3,135	12.0	12.3	11.7	10,277	322	3.1	3.6	2.6
Lecturer	4,230	207	4.9	5.4	4.2	1,069	28	2.6	3.3	1.6
Universities	89,367	54,603	61.1	65.8	39.4	31,608	18,457	58.4	63.7	34.1
Professor	30,468	28,327	93.0	93.1	90.5	11,609	11,146	96.0	96.2	93.3
Associate professor	25,260	20,953	82.9	83.2	81.3	8,073	6,036	74.8	75.1	72.9
Assistant professor	24,753	4,713	19.0	17.0	24.6	9,257	1,209	13.1	12.3	15.0
Instructor	6,240	421	6.7	6.1	7.3	1,894	52	2.7	3.0	2.4
Lecturer	1,982	130	6.6	7.1	5.8	588	11	1.9	1.9	1.9
Other 4-year institutions	113,634	68,531	60.3	64.8	45.7	66,594	32,633	49.0	53.8	34.9
Professor	27,947	26,464	94.7	94.8	93.7	15,810	14,155	89.5	89.9	86.9
Associate professor	32,537	27,039	83.1	83.5	81.3	17,410	12,568	72.2	72.5	71.1
Assistant professor	37,295	13,214	35.4	34.1	38.5	21,490	5,061	23.6	23.2	24.4
Instructor	12,686	1,682	13.3	13.0	13.5	7,724	231	3.0	3.3	2.7
Lecturer	1,935	66	3.4	4.0	2.7	465	17	3.7	5.3	1.5
2-year institutions	81,301	43,034	52.9	56.7	45.7	4,374	1,134	25.9	30.0	20.6
Professor	3,653	3,276	89.7	89.5	90.4	223	146	65.5	66.9	61.4
Associate professor	7,777	6,477	83.3	83.2	83.5	379	236	62.3	64.7	55.4
Assistant professor	11,474	5,992	52.2	53.5	50.0	617	156	25.3	30.6	19.0
Instructor	7,192	1,032	14.3	16.1	12.4	659	39	5.9	10.1	2.9
Lecturer	313	11	3.5	2.8	4.1	16				

SOURCE: U.S. Department of Health, Education, and Welfare, National Center for Education Statistics, "Survey of Full-time Instructional Faculty, 1976-77," forthcoming.

Source: The Condition of Education, p. 188.

level."¹⁶ In most fields, the revolving door syndrome will become more common as fewer promotions to higher-rank positions are available in the next decade. This situation is particularly frustrating for women Ph.D.'s, as the Carnegie Commission wrote in 1971:¹⁷

There are costs...in potential frustration for women students if they over-react to current opportunities. Because of the time lag in training, women starting work for the Ph.D. now can expect to come out of the 'pipeline' when new hires are approaching the zero point. They may come to share some of the frustrations of their male counterparts.

Table 24 analyzes in greater detail the respective rank of men and women scholars by Ph.D. cohort and field; it dramatizes the broad statistical inequalities which still exist in absolute numbers and in rank amongst the professoriate. The period of retrenchment which began in some fields nearly a decade ago, is now beginning to have an impact on faculty hiring in all of academia. This is due not only to declining enrollments (or the prospect thereof) at four-year colleges and universities, but also to the problems created by the demographic characteristics of the current professoriate. Table 23 show the ages of those employed in colleges and universities in 1969, 1973, and 1977; the 1969 data is from the Carnegie Commission survey, and the 1973 and 1977 data is compiled from the National Research Council Doctorate File.

Table 23

AGE OF THE AMERICAN FACULTY,
1969, 1973, AND 1977

Age	1969 (all fields)		1973 (science fields)		1977 (science fields)		1977 (humanities fields)	
	Percent of Total	Percent of Women	Percent of Total	Percent of Women	Percent of Total	Percent of Women	Percent of Total	Percent of Women
under 30	16.0	19.7	3.8	5.8	2.5	4.7	1.5	3.0
30-34	17.4	12.8	21.9	21.5	16.9	23.0	14.1	18.1
35-39	16.5	13.0	19.7	17.6	23.3	22.2	20.8	20.9
40-49	26.7	26.6	30.2	28.8	30.6	26.6	32.3	28.3
50-59	15.7	18.5	17.7	18.2	19.6	16.3	21.5	20.1
60 or older	7.7	9.3	6.7	7.9	7.1	6.8	9.2	9.3

Table 24

RANK FOR ACADEMICALLY EMPLOYED DOCTORAL SCIENTISTS AND ENGINEERS BY COHORT,
FIELD OF DOCTORATE, AND SEX, 1977

Ph.D. Cohort and Rank	Field of Doctorate and Sex																							
	All Fields		Mathematics		Comptr Sci		Phys/Astrn		Chemistry		Earth Sci		Engineering		Agric Sci		Medical Sci		Bio Sci		Psychology		Social Sci	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Total, 1934-1949 Ph.D.'s	3,566	731	656	60	-	-	823	28	1,682	73	225	7	532	1	452	-	155	19	2,113	285	533	106	1,395	152
Professor	82.6	56.5	92.1	66.7			65.9	60.7	79.4	53.4	83.6	100.0	83.8	100.0	85.2		89.0	0.0	82.4	42.1	93.1	72.6	85.7	73.7
Associate Professor	6.1	16.1	6.3	23.3			6.4	0.0	9.5	12.3	6.2	0.0	6.8	0.0	1.1		3.9	31.6	6.5	23.2	1.3	16.0	4.7	3.9
Assistant Professor	0.9	6.0	0.0	6.7			0.0	0.0	0.7	8.2	0.0	0.0	0.0	0.0	1.3		0.0	0.0	1.4	10.9	0.0	2.8	2.2	0.0
Instructor, Lecturer, Other	3.9	14.8	0.6	1.7			7.5	25.0	5.7	17.8	0.0	0.0	3.8	0.0	6.4		0.0	68.4	2.9	17.5	3.0	5.7	3.6	11.8
No Rank Reported	6.5	6.6	1.1	1.7			20.2	14.3	4.7	8.2	10.2	0.0	5.6	0.0	6.0		7.1	0.0	6.8	6.3	2.6	2.8	3.7	10.5
Total, 1950-1959 Ph.D.'s	25,704	1,828	1,615	63	17	-	2,761	59	2,925	240	850	21	2,517	4	1,595	16	570	56	5,604	643	2,649	348	4,601	378
Professor	81.9	53.5	86.7	69.8	100.0		73.5	61.0	73.5	52.9	87.3	52.4	87.4	25.0	81.6	87.5	77.9	73.2	78.7	45.4	83.5	54.6	90.2	58.7
Associate Professor	9.9	23.2	9.6	12.7	0.0		8.4	15.3	11.0	21.3	6.7	14.3	6.0	0.0	12.7	6.3	11.4	25.0	14.6	24.0	10.8	23.9	5.9	26.7
Assistant Professor	0.9	5.4	0.5	6.3	0.0		0.0	6.8	0.7	2.1	0.0	4.8	0.4	0.0	2.5	0.0	1.8	0.0	1.3	5.9	2.4	5.7	0.2	6.9
Instructor, Lecturer, Other	1.7	9.2	0.2	1.6	0.0		2.6	11.9	2.1	12.5	2.2	0.0	1.9	75.0	0.7	0.0	3.9	0.0	2.0	15.2	0.4	4.9	1.4	3.2
No Rank Reported	5.6	8.8	2.9	9.5	0.0		15.5	5.1	12.7	11.3	3.8	28.6	4.3	0.0	2.5	6.3	5.1	1.8	3.5	9.5	2.9	10.9	2.3	4.5
Total, 1960-1969 Ph.D.'s	53,159	5,167	4,617	322	161	11	5,472	111	5,311	526	1,725	31	7,870	31	2,849	41	1,370	138	9,905	1,740	4,562	1,128	9,317	1,088
Professor	42.8	21.6	42.1	29.5	49.7	36.4	34.6	7.2	35.5	13.7	50.3	12.9	48.4	35.5	49.0	41.5	42.6	29.7	35.8	15.9	39.7	20.4	53.1	33.0
Associate Professor	41.9	38.7	45.5	46.9	41.0	36.4	36.8	39.6	43.6	32.5	42.2	51.6	37.0	22.6	40.3	39.0	44.2	39.1	45.6	34.9	46.3	37.7	40.3	46.2
Assistant Professor	6.9	20.4	8.1	13.7	0.0	27.3	7.9	20.7	8.7	20.0	1.5	16.1	4.1	25.8	5.2	4.9	8.4	15.2	11.9	27.8	5.9	21.8	4.0	10.3
Instructor, Lecturer, Other	3.3	12.8	2.6	7.8	0.0	0.0	6.1	18.0	5.9	24.0	3.1	19.4	2.2	9.7	3.3	14.6	2.9	11.6	3.1	14.8	4.2	12.8	1.5	5.1
No Rank Reported	5.0	6.6	1.7	2.2	9.3	0.0	14.6	14.4	6.3	9.9	2.9	0.0	8.4	6.5	2.2	0.0	2.0	4.3	3.7	6.7	3.9	7.4	1.1	5.3
Total, 1970-1974 Ph.D.'s	40,062	6,921	3,278	316	419	27	3,419	135	3,126	410	1,366	68	3,798	42	1,979	82	1,286	260	7,910	2,127	3,894	1,474	9,587	1,980
Professor	4.4	7.0	5.6	1.9	1.2	0.0	1.8	0.0	2.5	1.7	1.4	5.9	6.0	0.0	5.4	0.0	4.1	8.5	2.9	1.1	1.6	1.1	7.6	3.1
Associate Professor	29.5	8	35.8	16.5	38.4	11.1	17.9	6.7	14.6	8.5	31.4	4.4	31.5	19.0	34.4	22.0	28.1	28.5	20.0	8.6	29.4	18.1	42.1	29.2
Assistant Professor	46.9	3.1	50.1	61.1	51.6	81.5	38.3	38.5	47.9	37.1	39.4	69.1	41.6	52.4	44.9	28.0	47.1	40.4	51.5	48.7	55.4	59.0	44.5	58.2
Instructor, Lecturer, Other	10.8	18.2	3.9	16.5	6.2	0.0	16.5	31.9	22.4	33.7	13.8	19.1	7.6	7.1	10.1	32.9	17.9	16.9	16.6	28.7	9.8	13.3	3.3	6.8
No Rank Reported	8.4	8.9	4.6	4.1	2.6	7.4	25.5	23.0	12.6	19.0	14.0	1.5	13.3	21.4	5.3	17.1	2.7	5.8	9.0	12.9	3.8	8.5	2.4	2.6
Total, 1975-1976 Ph.D.'s	11,456	2,704	900	109	132	25	918	43	907	139	443	57	1,255	16	478	36	357	146	2,328	698	1,214	590	2,524	845
Professor	0.5	1.0	1.3	1.8	0.0	0.0	0.0	2.3	0.0	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	6.8	0.0	0.0	1.5	0.8	0.8	1.2
Associate Professor	4.6	5.0	2.4	5.5	35.6	0.0	2.1	4.7	0.1	7.2	4.5	0.0	5.5	0.0	13.6	0.0	4.5	26.0	1.5	2.7	2.5	0.5	8.0	6.6
Assistant Professor	50.2	51.8	64.0	65.1	53.8	92.0	22.2	11.6	23.4	20.1	58.9	38.6	49.0	43.8	63.2	44.4	32.8	18.5	32.0	30.1	59.0	66.6	76.3	71.0
Instructor, Lecturer, Other	24.9	25.2	29.4	25.7	0.0	8.0	36.7	58.1	39.9	36.0	23.3	28.1	16.0	6.3	20.9	16.7	35.0	33.6	36.3	33.0	20.8	23.1	10.5	16.4
No Rank Reported	19.8	16.9	2.8	1.8	10.6	0.0	39.0	23.3	36.6	36.7	13.3	33.3	28.9	50.0	2.3	38.9	27.7	15.1	30.3	34.2	16.3	9.0	4.3	4.7

Table 24 (continued)

RANK FOR ACADEMICALLY EMPLOYED Ph.D.'s IN THE HUMANITIES
AND SELECTED SOCIAL SCIENCES BY COHORT,
FIELD OF DOCTORATE, AND SEX, 1977

Ph.D. Cohort and Rank	Field of Doctorate and Sex																					
	All Fields		History		Art History		Music		Speech		Philosophy		Other Human		Eng/Am Lit		Classical Lang & Lit		Modern Lang & Lit		Social Sci*	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Total, 1934-1949 Ph.D.'s	2,504	432	666	94	22	9	67	6	49	6	202	45	55	7	491	112	115	60	376	58	461	35
Professor	84.7	76.6	86.6	92.6	90.9	55.6	85.1	100.0	83.7	33.3	85.1	80.0	80.0	57.1	88.4	80.4	79.1	53.3	85.1	67.2	79.0	85.7
Associate Professor	5.3	10.9	8.1	7.4	0.0	0.0	6.0	0.0	0.0	0.0	0.0	6.7	18.2	42.9	3.7	13.4	12.2	20.0	7.2	12.1	1.1	0.0
Assistant Professor	0.6	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.4	3.5	0.0
Instructor, Lecturer, Other	2.4	7.4	1.7	0.0	0.0	0.4	0.0	0.0	14.3	0.0	0.0	13.3	0.0	0.0	1.8	6.3	0.0	20.0	1.9	5.2	5.9	0.0
No Rank Reported	7.0	4.6	3.6	0.0	9.1	0.0	9.0	0.0	2.0	66.7	14.9	0.0	1.8	0.0	6.1	0.0	8.7	6.7	5.9	12.1	10.6	14.3
Total, 1950-1959 Ph.D.'s	8,865	1,039	2,170	188	131	34	379	27	568	71	702	49	184	36	1,943	262	152	35	1,085	234	1,551	103
Professor	87.0	58.0	88.8	58.0	92.4	61.8	81.8	48.1	84.9	45.1	80.1	73.5	77.7	83.3	88.9	56.9	75.7	48.6	84.1	61.1	90.8	51.5
Associate Professor	7.2	25.3	5.9	26.6	7.5	26.5	11.3	25.9	6.2	28.2	12.5	22.4	9.2	5.6	6.0	25.6	16.4	22.9	9.7	23.5	4.4	33.0
Assistant Professor	1.1	3.7	1.2	0.0	0.0	5.9	0.0	0.0	1.8	7.0	2.0	0.0	0.0	0.0	0.8	7.3	0.0	0.0	1.8	5.1	0.6	0.0
Instructor, Lecturer, Other	1.7	8.8	1.1	11.7	0.0	5.9	2.4	11.1	1.9	19.7	0.0	0.0	1.6	11.1	2.5	6.9	0.0	28.6	1.8	5.1	2.3	5.8
No Rank Reported	3.1	4.2	2.9	3.7	0.0	0.0	4.5	14.8	5.3	0.0	5.4	4.1	11.4	0.0	1.8	3.4	7.9	0.0	2.8	5.1	1.9	9.7
Total, 1960-1969 Ph.D.'s	17,925	3,575	4,364	440	232	121	899	115	1,218	212	1,319	178	291	76	4,168	1,249	383	69	1,975	763	3,076	352
Professor	47.5	31.0	49.3	25.9	49.1	39.7	66.2	40.0	55.1	43.4	41.7	32.0	57.0	48.7	44.2	32.5	48.3	17.4	35.6	26.0	50.2	28.4
Associate Professor	41.7	44.3	39.1	47.7	43.1	37.2	26.6	34.8	39.4	35.4	39.6	53.9	36.4	34.2	42.1	41.8	45.4	37.7	52.6	47.7	43.8	50.6
Assistant Professor	6.2	14.0	6.2	16.6	2.2	15.7	3.6	18.3	1.8	9.0	11.0	2.2	0.3	14.5	8.9	13.1	2.9	23.2	7.3	18.1	3.3	9.7
Instructor, Lecturer, Other	2.1	5.4	2.5	4.5	0.0	2.5	1.9	2.6	0.9	6.6	5.2	6.2	4.8	2.6	0.6	5.4	1.6	17.4	2.6	5.4	2.1	5.4
No Rank Reported	2.6	5.3	2.9	5.2	5.6	5.0	1.8	4.3	2.8	5.7	2.6	5.6	1.4	0.0	4.2	7.1	1.8	4.3	1.9	2.9	0.5	6.0
Total, 1970-1974 Ph.D.'s	15,733	4,993	3,302	631	220	208	991	198	713	154	1,427	186	423	227	3,527	1,654	251	72	1,917	1,095	2,962	568
Professor	7.0	4.6	7.2	5.9	2.3	6.3	16.2	19.7	17.3	7.1	5.7	0.0	9.5	3.1	5.1	4.5	3.2	0.0	4.2	2.1	6.5	4.8
Associate Professor	38.9	25.7	44.0	28.4	38.2	22.1	39.0	23.2	40.4	20.1	32.2	20.4	32.9	20.3	36.1	29.0	33.9	13.9	35.9	22.6	42.7	28.5
Assistant Professor	44.9	51.2	38.8	37.9	53.6	58.2	30.4	41.9	33.7	47.4	54.7	53.2	48.2	50.2	48.9	48.6	60.2	77.8	55.7	58.4	40.4	57.9
Instructor, Lecturer, Other	5.6	13.8	7.7	18.5	3.2	9.1	11.0	9.1	4.8	14.9	5.8	16.7	5.9	19.8	4.1	15.6	2.8	5.6	2.1	12.6	6.0	6.7
No Rank Reported	3.6	4.6	2.4	9.4	2.7	4.3	3.4	6.1	3.9	10.4	1.7	9.7	3.5	6.6	5.8	2.4	0.0	2.8	2.1	4.2	4.4	2.1
Total, 1975-1976 Ph.D.'s	3,720	1,984	801	255	73	78	309	80	80	21	402	88	95	65	723	647	73	36	538	511	626	203
Professor	2.3	1.1	6.6	0.4	0.0	0.0	2.6	6.3	0.0	0.0	0.0	0.0	9.5	6.2	0.4	0.5	0.0	0.0	1.9	1.6	0.6	0.5
Associate Professor	12.4	8.6	17.4	6.3	13.7	12.8	31.1	16.3	17.5	0.0	7.2	13.6	10.5	21.5	12.4	6.8	0.0	0.0	7.1	10.0	5.9	5.4
Assistant Professor	65.4	60.1	54.9	58.4	75.3	62.8	50.8	45.0	76.3	90.5	68.4	64.8	65.3	52.3	63.2	59.0	80.8	61.1	77.3	61.1	72.0	65.0
Instructor, Lecturer, Other	15.6	27.0	19.1	27.8	11.0	20.5	8.7	32.5	6.3	9.5	24.1	17.0	6.3	15.4	17.2	30.4	19.2	38.9	11.0	25.2	14.2	27.6
No Rank Reported	4.2	3.2	2.0	7.1	0.0	3.8	6.8	0.0	0.0	0.0	0.2	4.5	8.4	4.6	6.8	3.2	0.0	0.0	2.8	2.2	7.2	1.5

*Social sciences for the humanities chapter include the following selected fields: archeology, linguistics, area studies, political science, public administration, and international relations.

Source: Science, Engineering, and Humanities Doctorates in the United States: 1977 Profile, NRC, pp. 25, 53.

These figures show that the percentage of faculty in their forties and fifties has jumped from 42.4 percent to 50.2 percent (53.8 percent for the humanities) in this decade. This represents a huge "log-jam" through which all young scholars, especially women, must negotiate before they can receive an academic position; since the age of the faculty is rising ever so slowly, there will be fewer first jobs available as retrenchment deepens.

Further evidence, compiled in Appendix B, confirms that a greater percentage of younger women are currently employed in academia than their male colleagues; yet, the rate of academic employment has slowed considerably. This trend was first reported by the late Allan M. Cartter and Wayne E. Ruhter in The Disappearance of Sex Discrimination in First Job Placement of New PhDs in 1975. In addition, the demographic data suggests there might not be much opportunity for improvements in the decade ahead. Even now, several years prior to the enforcement of recent retirement legislation, higher education is finding it difficult to hire "new blood." For women, this poses difficult questions: how will women increase their share of the academic labor force in such a "no-growth" environment? Will universities replace the large number of older women (if they retire) or leave their positions vacant as an economy measure?

Throughout this paper, different types of institutions have been compared to assess their performance in attracting women. Prior to this decade, the most prestigious universities produced a smaller number of women Ph.D.'s and hired an even smaller percentage of women faculty than did other types of institutions. Since 1973, however, these top institutions appear to have increased the number of female new hires substantially. In addition, Cartter and Ruhter found that 23.8 percent of the women, but only 20.6 percent of the men, found jobs at institutions equal or superior to the schools at which they

received their doctorate.¹⁸ In fact, the National Science Foundation data pertaining to the employment of women in the sciences indicates that the very best institutions have had the greatest success in the past few years in recruiting full-time women scientists. Table 25 shows that the twenty institutions which rank highest in the total number of doctoral scientists and engineers employed have boosted the absolute number and percentage of employed women scientists to levels higher than those achieved by other doctorate-granting institutions. This reflects the competitive advantage these institutions have for the small supply of highly-qualified women academic scientists which presently exists.

A final critical area to be addressed is salary equalization. The Equal Pay Act of 1963 and Title VII of the 1964 Civil Rights Act prohibit discrimination in salaries on the basis of sex. But, several 1975 studies showed that salary differentials existed even when one corrected for degree held, years of employment, academic discipline, research productivity, and rank. These studies also indicate that differentials have been all but eradicated for junior faculty members.¹⁹ Yet, the national aggregate data show that salary inequalities persist, particularly among older faculty and at private institutions. The National Center for Education Statistics data for 1977-78 note that the gap between men's and women's salaries had narrowed, but not closed. Women's salaries increased by 5.6 percent, compared to 5.2 percent for the men. Table 26 suggests what progress women have made in this regard since 1972.

Earlier in this paper, the competitive position of academia in the general marketplace for Ph.D.'s was discussed. Certainly, the ability of institutions to match the financial rewards of non-academic employment will play a key role in their ability to recruit women faculty; institutions may be unable to attract sought-after women scientists if the real dollar value of academic salaries continues to rise.

Table 25

DISTRIBUTION OF FULL-TIME SCIENTISTS AND ENGINEERS AT THE FIRST, TWENTY, FORTY, FIFTY, OTHER AND ALL DOCTORATE GRANTING INSTITUTIONS IN EMPLOYMENT OF SCIENTISTS & ENGINEERS, BY FIELD AND SEX, JANUARY 1974 - JANUARY 1977

	TOP TWENTY				TOP FORTY			TOP FIFTY			ALL OTHER INSTITUTIONS			ALL DOCTORATE-GRANTING INSTITUTIONS		
	1974	1975	1976	1977	1975	1976	1977	1975	1976	1977	1975	1976	1977	1975	1976	1977
TOTAL ALL FIELDS	36,653	41,187	40,993	41,997	67,207	66,204	66,307	77,099	75,435	76,066	77,823	78,773	83,526	154,922	154,208	159,592
Women	5,916	7,158	7,316	7,297	11,015	11,017	10,704	12,221	12,040	11,955	10,253	10,900	11,654	22,474	22,940	23,609
% Women	16.1	17.4	17.8	17.4	16.4	16.6	16.1	15.9	16.0	15.7	13.2	13.8	14.0	14.5	14.8	14.8
ENGINEERS	3,543	4,825	4,836	5,038	6,806	7,020	7,279	7,880	8,302	8,133	8,731	8,562	9,614	16,611	16,864	17,747
Women	65	177	210	240	207	242	273	221	261	285	97	111	129	318	372	414
% Women	1.8	3.7	4.3	4.8	3.0	3.4	3.7	2.8	3.1	3.5	1.1	1.3	1.3	1.9	2.2	2.3
PHYSICAL SCIENTISTS	3,037	3,622	3,564	3,844	6,067	6,174	6,220	6,763	6,975	6,939	8,177	8,523	8,928	14,940	15,498	15,867
Women	144	215	255	264	311	382	413	343	417	446	486	527	537	829	944	983
% Women	4.7	5.9	7.1	6.9	5.1	6.2	6.6	5.1	6.0	6.4	5.9	6.2	6.0	5.5	6.1	6.2
ENVIRONMENTAL SCI.	897	1,160	1,236	1,418	1,798	1,940	2,124	2,133	2,333	2,639	2,250	2,431	2,745	4,383	4,764	5,384
Women	45	80	87	130	116	120	186	130	139	212	70	104	126	200	243	338
% Women	5.0	6.9	7.0	9.2	6.5	6.2	8.8	6.1	6.0	8.0	3.1	4.3	4.6	4.6	5.1	6.3
MATH & COMPUTER SCI.	1,715	2,017	2,069	2,253	3,426	3,597	3,702	4,005	4,153	4,242	5,851	6,240	6,605	9,886	10,393	10,847
Women	115	186	210	251	309	342	356	356	394	405	521	656	667	877	1,050	1,072
% Women	6.7	9.2	10.2	11.1	9.0	9.5	9.6	8.9	9.5	9.5	8.9	10.5	10.1	8.9	10.1	9.9
LIFE SCIENTISTS	21,150	22,614	22,876	22,644	37,006	36,058	36,007	42,049	40,829	41,544	35,442	37,119	38,631	77,536	77,948	80,175
Women	4,526	5,190	5,180	4,940	7,912	7,627	7,242	8,723	8,338	8,120	6,535	6,680	7,198	15,258	15,018	15,318
% Women	21.4	23.0	22.6	21.8	21.4	21.1	20.1	20.7	20.4	19.5	18.4	18.0	18.6	19.7	19.3	19.1
PSYCHOLOGISTS	1,344	1,534	1,468	1,709	2,608	2,721	2,719	3,078	3,047	3,098	4,142	4,432	4,780	7,220	7,479	7,878
Women	266	388	418	480	609	714	708	694	763	780	854	854	958	1,461	1,617	1,738
% Women	19.8	25.3	28.5	28.1	23.4	26.2	26.0	22.5	25.0	25.2	18.5	19.3	20.0	20.2	21.6	22.1
SOCIAL SCIENTISTS	4,968	5,415	4,924	5,091	9,496	8,694	8,256	11,146	9,796	9,471	13,200	11,466	12,223	24,346	21,262	21,694
Women	755	922	956	992	1,551	1,590	1,526	1,754	1,728	1,707	1,777	1,968	2,039	3,531	3,696	3,746
% Women	15.2	17.0	19.4	19.5	16.3	18.3	18.5	15.7	17.6	18.0	13.5	17.2	16.7	14.5	17.4	17.3

Source: Professional Women and Minorities, Scientific Manpower Commission, 11/78.

TABLE 26

NUMBER AND AVERAGE SALARY OF FULL-TIME INSTRUCTIONAL FACULTY
ON 9-10 MONTH CONTRACTS IN INSTITUTIONS OF HIGHER EDUCATION,
BY TYPE OF INSTITUTION, ACADEMIC RANK, AND SEX: UNITED STATES
1972-73 and 1977-78

1972-73

Rank and sex	Total		Universities		Other 4-year institutions		2-year institutions	
	Number of faculty members	Average salary	Number of faculty members	Average salary	Number of faculty members	Average salary	Number of faculty members	Average salary
1	2	3	4	5	6	7	8	9
Total	251,897	\$13,813	93,334	\$15,301	120,192	\$13,059	38,371	\$12,553
Men	195,843	14,360	78,008	15,969	92,105	13,493	25,729	12,890
Women	56,054	11,901	15,326	12,410	28,086	11,638	12,642	11,868
Professors	55,424	18,916	27,616	20,792	25,378	17,131	2,430	16,231
Men	49,968	19,127	25,876	20,967	22,198	17,203	1,894	16,544
Women	5,456	16,978	1,740	18,199	3,180	16,622	536	15,122
Associate professors	58,755	14,354	24,409	14,983	30,044	13,833	4,302	14,426
Men	49,205	14,472	21,366	15,072	24,613	13,953	3,226	14,459
Women	9,550	13,748	3,043	14,359	5,431	13,291	1,076	14,327
Assistant professors	86,234	12,046	31,371	12,464	46,697	11,741	8,166	12,181
Men	65,710	12,232	25,172	12,602	34,981	11,960	5,557	12,259
Women	20,524	11,450	6,199	11,901	11,716	11,086	2,609	12,015
Instructors	51,484	10,662	9,938	9,779	18,073	9,462	23,473	11,959
Men	30,960	11,005	5,594	10,031	10,314	9,605	15,052	12,327
Women	20,524	10,143	4,344	9,454	7,759	9,273	8,421	11,301

SOURCE: U.S. Department of Health, Education, and Welfare,
Office of Education, National Center for Educational Statistics,
preliminary data from release dated February 18, 1973.

1977-78

ALL INSTITUTIONAL UNITS

RANK AND SEX	TOTAL		UNIVERSITIES		OTHER 4-YEAR		2-YEAR	
	NO. OF FACULTY	AVERAGE SALARY	NO. OF FACULTY	AVERAGE SALARY	NO. OF FACULTY	AVERAGE SALARY	NO. OF FACULTY	AVERAGE SALARY
TOTAL	301,408	\$18,440	89,337	\$20,459	147,348	\$17,618	64,723	\$17,532
Men	224,574	19,309	72,623	21,390	110,019	16,377	41,932	18,111
Women	76,834	15,897	16,714	16,417	37,329	15,363	22,791	16,330
Professors	70,305	24,730	30,602	26,937	36,683	23,147	3,020	21,464
Men	63,457	24,972	28,789	27,092	32,329	23,316	2,339	21,717
Women	6,848	22,493	1,813	24,478	4,354	21,897	681	21,000
Associate professors	74,131	18,707	25,188	19,592	42,727	18,179	6,216	18,717
Men	60,813	18,879	21,557	19,738	34,770	18,348	4,486	18,818
Women	13,318	17,921	3,631	18,723	7,957	17,444	1,730	18,464
Assistant professors	82,390	15,353	25,384	15,891	48,324	14,991	8,682	15,719
Men	56,313	15,561	18,090	16,104	32,811	15,201	5,412	15,919
Women	26,077	14,903	7,294	15,363	15,513	14,547	3,270	15,530
Instructors	28,515	12,721	3,639	12,489	15,525	12,154	7,351	14,010
Men	14,248	13,140	2,722	12,647	7,509	12,438	4,017	14,717
Women	14,267	12,301	2,917	12,341	8,016	11,888	3,334	13,212
Lecturers	4,182	13,817	2,100	14,363	1,731	13,482	351	12,212
Men	2,394	14,506	1,218	15,057	987	14,246	189	12,313
Women	1,788	12,895	882	13,405	744	12,468	162	12,010
NO ACADEMIC RANK	41,885	17,834	424	14,152	2,358	14,299	39,133	18,010
Men	27,349	18,479	247	15,619	1,613	14,797	25,489	18,717
Women	14,536	16,619	177	12,105	745	13,222	13,614	16,810

Thus, while National Research Council data suggest that women doctorates do not enjoy the benefits of salary equalization in any industry,²⁰ opportunities outside of academia may well become more attractive in the near future.

It is difficult to predict what impact the decline in real academic salaries will have on the composition of the faculty in the next decade. On the one hand, Ph.D.'s in the sciences have generally been able to command larger salaries in industry, yet a large percentage of scientists have chosen academic employment. But, if the decline in real salaries is great enough, which might well be the case during a period of financial constraint and excess supply, such a decline could bring about a modest net out-migration of faculty. As Cartter asserts, if 1 percent of the current stock of faculty were to leave academia, an additional 10 percent of new doctorates could be hired.²¹ However, at a time when interinstitutional mobility and the hiring of senior faculty will be sharply reduced, any openings will probably consist of junior positions with little chance for promotion. The revolving door syndrome may become a fact of life for both sexes. Economics, as well as demographics, will make the implementation of affirmative action plans more problematic.

Consequently, despite the progress women and minorities have made, the outlook is bleak for affirmative action. For the most part, this is due to higher education's late start: as the Carnegie Commission wrote in 1971, "No progress was made in the 1960s when it should have been made on a very major scale. Higher education is already at least 10 years too late."²² The next decade will provide fewer opportunities for remedial action, since new faculty hires will be few in number. The following table compares the results of two recent studies, one by Roy Radner and Charlotte Kuh for the Carnegie Council on Policy Studies, and the other by Thomas Corwin

and Paula Knepper of the American Council on Education's Policy Analysis Service, which attempt to predict the number of new doctorate hires in the 1980s. This paper is not an appropriate place to analyze their data; it is included to provide the reader with some sense of the impact of retrenchment on the over 35,000 Ph.D.'s (about 8,500 of which are women) produced each year in this country.

TABLE 27
BASELINE DEMOGRAPHIC PROJECTIONS
OF DOCTORATE HIRES, 1979-1990

	Radner-Kuh ²³	Corwin-Knepper ²⁴
1979	10,693	17,300
1980	10,749	15,300
1981	9,523	11,300
1982	9,316	6,800
1983	7,816	0
1984	7,260	0
1985	5,708	0
1986	5,771	0
1987	7,410	0
1988	8,943	0
1989	10,262	3,800
1990	5,907	6,500

These figures, however different, are based primarily on the same assumptions: including a student-faculty ratio which has remained at about 17-to-1 for well over a decade. Given what we know about the enrollment boom in the 1960s, it is hardly surprising that, in 1976, over one-half of the American professoriate had been hired in the previous 15 years.²⁵ But, it is hardly comforting for those about to enter the academic labor market in a period of declining enrollment.

New hiring depends on a number of factors: the number of enrollments, the number of retirements, the rate of attrition, and the tenure ratio. No variable offers much hope; in fact, Radner and Kuh estimate that the total number of faculty in 1990 will be 1.5 percent lower than in 1975. What makes this figure

even more dramatic is that employment in academia will have been growing at two percent a year for the two decades prior to 1980. Radner and Kuh's conservative estimate projects that new doctoral hiring will fall 47 percent between 1980 and 1985.²⁶ Clearly, the brakes are about to be applied; is higher education prepared for the whiplash?

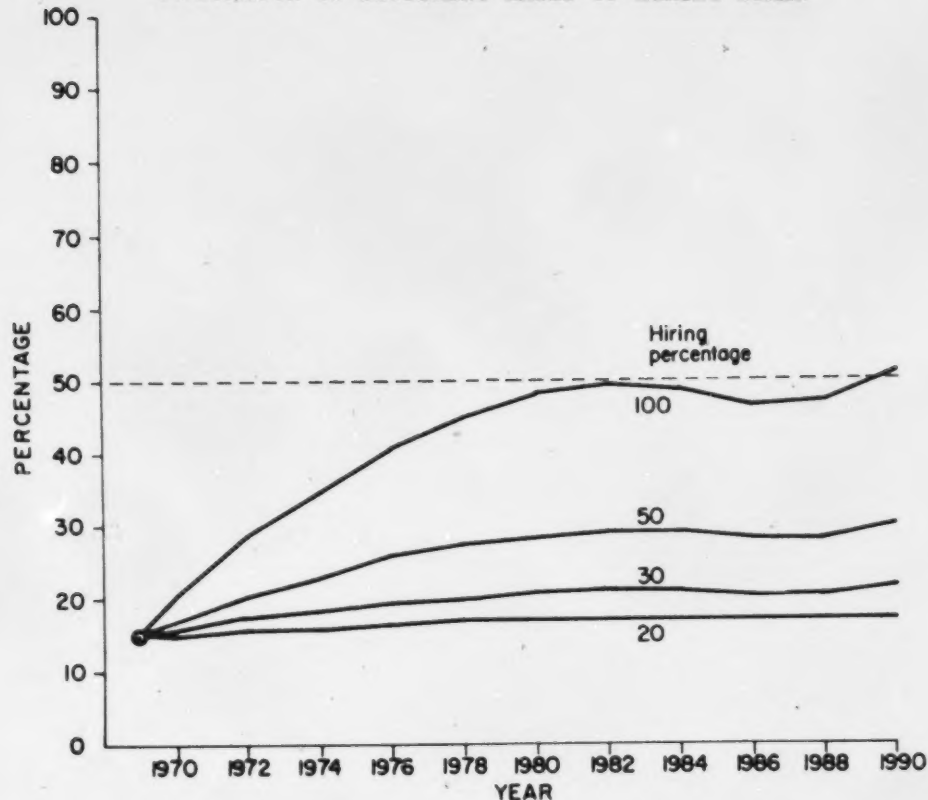
It will be difficult at best for affirmative action to make much headway in this period of retrenchment. Faculty face a period of contraction in size, and a decline in real academic salaries as well. In such an environment, the chances of obtaining tenure will probably be even worse. While this may increase attrition, new retirement legislation and inflation may keep older faculty on the job longer. Several years ago, Elizabeth Scott forecasted the impact of different rates of hiring women in a depressed academic market. Today, her projections seem optimistic, for example, recent retirement legislation will lower the number of new positions available. Her data for universities suggest the magnitude of the challenge which lies ahead.

Based on this, and other, information, the Carnegie Commission concluded: "It will take until about the year 2000, under reasonable assumptions, before women are likely to be included in the national professoriate in approximately the same proportions as they are in the total labor force -- this is a task for a generation of effort."²⁷

Given the generations of discouragement, or outright discrimination, the progress women and minorities have made in the past decade is substantial. Women are enrolling in undergraduate and doctoral programs in ever-increasing numbers in fields unheard-of less than a generation ago; clearly, the slow process of changing social mores has begun in earnest. In addition, the collapse of barriers to professional schools has given

Chart 2

WOMEN AS A PERCENTAGE OF FACULTY MEMBERS,
PROJECTED, 1970 TO 1990, IN UNIVERSITIES,
INITIAL PERCENTAGE IN 1969 EQUAL TO 14.67.
COMPARISON OF DIFFERENT RATES OF HIRING WOMEN



Source: "Supply Implications of Increased Participation of Women and Minorities," by Elizabeth L. Scott, Presented at AAAS and Scientific Manpower Commission Symposium, February 25, 1974.

women and minorities the opportunity to enter lucrative careers in which they have been traditionally underrepresented.²⁸ To this end, the federal government has been instrumental in encouraging institutions to actively pursue the goals of equality of opportunity; however, despite increased interest on the part of women and minorities to augment and strengthen their representation in all fields, vigilant pressure will still be required to improve the status of women in academia. But, providing equal opportunity, even with "affirmative action," may have only a limited impact in the static period of retrenchment higher education will be facing in the 1980s.

NOTES

NOTES

1. The Condition of Education: 1978, National Center for Education Statistics, pp. 120, 138; A. Bayer, College and University Faculty, American Council on Education, 1970.
2. Ibid.; and Earned Degrees Conferred: Analysis of Trends, 1965-66 Through 1975-76, National Center for Education Statistics, 1977; National Advisory Committee on Blacks in Higher Education, Annual Report, 1978, p. 26.
3. The Condition of Education: 1978, p. 120.
4. Scientific Manpower Commission, Professional Women and Minorities, p. 14.
5. This data was provided generously by Fred L. Crossland, Vice President of the Ford Foundation.
6. See David O. Levine, "Characteristics of the Historically Black Colleges and Universities," section I of "Developing Institutions: Background and Policy Alternatives," by Edward S. Gruson, Sloan Commission on Government and Higher Education, December 1978.
7. Earned Degrees Conferred, p. 8.
8. Richard Freeman, The Over-Educated American, (New York: Academic Press, 1976), p. 171.
9. Carnegie Commission on Higher Education, Opportunities for Women in Higher Education, September 1973, pp. 66, 68.
10. Allan Cartter, Ph.D.'s and the Academic Labor Market, (New York, 1975), p. 217.
11. Scientific Manpower Commission, pp. 21, 91.
12. This is the most optimistic forecasts of the academic job market; it can be found in Cartter, p. 183.
13. Oliver Fulton, "Rewards and Fairness: Academic Women in the United States," in Martin Trow, ed. Teachers and Students, (New York, 1975), p. 202.
14. H. Astin and A. Bayer, "Sex Discrimination in Academia," Educational Record, volume 53 (1972), p. 101.
15. Fulton, p. 243.
16. Barbara Reagan, "Stocks and Flows of Academic Economists," paper discussed before the American Economic Association, August 1978, p. 2.
17. Carnegie Commission, p. 206.

18. A. Cartter and W. Ruhter, The Disappearance of Sex Discrimination in First Job Placement of New Ph.D.'s, Higher Education Research Institute, 1975, p. 20.
19. Cartter, p. 206.
20. National Research Council, Science, Engineering, and Humanities Doctorates in the United States: 1977 Profile, pp. 24, 50.
21. Cartter, p. 184.
22. Carnegie Commission on Higher Education, p. 6.
23. Roy Radner and Charlotte Kuh, Preserving a Lost Generation, Carnegie Council on Policy Studies in Higher Education, 1978, p. 40.
24. Thomas Corwin and Paula Knepper, Finance and Employment Implications of Raising the Mandatory Retirement Age for Faculty, American Council on Education, 1978, p. 46. Corwin's projections listed here assume "retirement at 70."
25. Radner and Kuh, p. 1.
26. Ibid., pp. 5, 17.
27. Carnegie Commission on Higher Education, p. 6.
28. See, for example, John Murphy and David O. Levine, "Government Involvement in American Medical Education," a working paper for the Sloan Commission on Government and Higher Education, January 1979.

APPENDICES

APPENDIX A

DOCTORATE RECIPIENTS WHO ARE U.S. CITIZENS OR HAVE PERMANENT VISAS, 1973-76,
BY FIELD AND SUBFIELD, SEX AND RACIAL/ETHNIC GROUP

FIELD OF PH.D.	TOTAL *			WHITE			BLACK			AM. INDIAN			CHICANO			PUERTO RICAN			ASIAN		
	Total	W	%Wm	Total	W	%Wh	Total	W	%Bl	Total	W	%In	Total	W	%Ch	Total	W	%PR	Total	W	%As
Total all Fields	115,523	25,258	21.9	94,530	20,954	93.6	3,692	1,221	3.7	526	114	0.5	937	188	0.9	224	65	0.2	4,163	660	4.1
PHYSICAL SCIENCE	16,062	1,278	8.0	12,987	1,008	90.5	155	15	1.1	51	4	0.4	84	2	0.6	19	2	0.1	1,059	148	7.4
MATHEMATICS	3,702	381	10.3	3,023	323	90.7	40	5	1.2	15		0.5	21	1	0.6	5		0.2	229	25	6.9
Algebra	440	82	18.6	381	73	93.4	7	1	1.7	2		0.5	2		0.5	-	-	-	16	3	3.9
Analysis	644	59	9.2	532	51	90.5	8		1.4	2		0.3	6		1.0	2		0.3	38	4	6.5
Geometry	94	11	11.7	70	8	88.6	1		1.3				1		1.3	-	-	-	7		8.9
Logic	109	11	10.1	95	11	99.0										-	-	-	1		1.0
Number Theory	90	7	7.8	79	7	94.0							1		1.2	-	-	-	4		4.8
Prob. Math Stat.	498	57	11.4	411	45	88.4	6	1	1.3	2		0.4	1		0.2	-	-	-	45	8	9.7
Topology	347	33	9.5	286	30	92.6	4	1	1.3	1		0.3	1		0.3	1		0.3	17	1	5.5
Computing Theory	618	51	8.3	517	48	91.2	2		0.4	6		1.1	4		0.7	-	-	-	38	1	6.7
Operations Res.	88	4	4.5	72	2	91.1	1		1.2	1		1.2				-	-	-	5		6.3
Applied Math.	358	16	4.5	281	10	87.5	5		1.5	1			4	1	1.2	1		0.3	29	2	9.0
Math, General	255	28	11.0	167	23	88.8	3	1	1.6				1		0.5	-	-	-	17	2	9.0
Math, Other	161	22	13.7	132	15	89.2	3		2.0							1		0.7	12	4	8.1
PHYSICS & ASTRONOMY	4,378	170	3.9	3,516	124	91.0	28	3	0.7	13		0.3	22		0.6	5		0.1	280	26	7.2
Astronomy	225	21	9.3	200	20	97.1				2		1.0				-	-	-	4		1.9
Astrophysics	247	7	2.8	206	5	95.8	1		0.5							-	-	-	8		3.7
Atomic & Molecular	422	10	2.4	358	8	93.2				1		0.3	2		0.5	1		0.3	22		5.7
Electromagnetic	39	2	5.1	32	2	88.9													4		11.1
Mechanics	12	1	8.3	9	1	90.0	1		0.0												
Acoustics	47	2	4.3	45	2	97.8													1		2.2
Fluids	76	2	2.6	62	1	87.3							1		1.4				8	1	11.3
Plasma Physics	221	4	1.8	171	3	86.8				2		1.0	3		1.5				21		10.6
Optics	118	3	2.5	91	3	88.3	1		1.0				2		1.9				9		8.7
Thermal Physics	38	3	7.9	28		82.3													6	2	17.6
Element. Particles	493	23	4.7	405	19	91.6	5	1	1.1	1		0.2	2		0.4				29	1	6.5
Nuclear Structure	445	14	3.1	373	9	92.1	3		0.7				2		0.5	2		0.5	25	5	6.2
Solid State	1,113	45	4.0	886	30	88.8	9	1		5		0.5	3		0.3	1		0.1	94	8	9.4
Physics, General	445	17	3.8	295	11	89.4	1		0.3	1		0.3	4		1.2				29	5	8.9
Physics, Other	437	16	3.7	355	10	92.0	6	1	1.6	1		0.3	3		0.8	1		0.3	20	4	5.2
CHEMISTRY	6,081	614	10.1	4,880	465	88.8	86	7	1.6	12		0.2	35		0.6	6	2	0.1	476	92	8.6
Analytical	519	29	5.6	454	24	93.6	10	1	2.0	2		0.4	3		0.6	1	1	0.2	15	1	3.1
Inorganic	859	111	12.9	713	92	91.3	16	1	2.0	3		0.4	7		0.9	2	1	0.3	40	6	5.2
Organic	2,112	152	7.2	1,727	115	90.1	33		1.7	3		0.2	13		0.7	2		0.1	140	24	5.7
Nuclear	93	5	5.4	77	5	89.5	3		3.5										6		7.0
Physical	1,395	182	13.0	1,111	143	86.7	16	2	1.2	3		0.2	11		0.9	1		0.1	141	27	11.0
Theoretical	174	23	13.2	148	19	91.4	3		1.9										11	3	6.8
Agric. & Food	34	5	14.7	22	2	75.9	1		3.4										6	2	20.7
Pharmaceutical	212	24	11.3	153	14	81.4	2		1.0				1		0.5				32	8	17.0
Polymer	100	7	7.0	73	3	73.7													26	4	26.3
Chemistry, General	430	40	9.3	230	23	84.2	2	1	0.7	1		0.4							40	10	14.7
Chemistry, Other	213	36	16.9	172	25	90.1													19	7	9.9

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APPENDIX A (continued)

FIELD OF PH.D.	TOTAL *			WHITE			BLACK			AM. INDIAN			CHICANO			PUERTO RICAN			ASIAN		
	Total	W	%Wm	Total	W	%Wh	Total	W	%Bl	Total	W	%In	Total	W	%Ch	Total	W	%PR	Total	W	%As
EARTH SCIENCE	1,901	113	5.9	1,590	96	94.3	2		0.1	11	1	0.7	6		0.4	3		0.2	74	5	4.4
Mineral, Petrol.	147	6	4.1	129	4	97.7							1		0.8				2		1.5
Geochemistry	155	10	6.5	128	9	94.1				1		0.7	1		0.7				6	1	4.4
Statig, Sedim	182	10	5.3	170	9	99.4				1		0.6									
Paleontology	160	21	13.1	141	19	97.9				2	1	1.4							1		0.7
Structural Geo.	66	3	4.5	61	1	100.0															
Geophysics	211	7	3.3	168	7	88.9				2		1.1							19		10.1
Geophysics SE	30	1	3.3	26		100.0															
Geomorph	103	4	3.9	92	4	98.9				1		1.1									
Hydrology	64	1	1.6	50	1	89.3				1		1.8	1		1.8	1		1.8	4		7.1
Oceanography	300	25	8.3	253	24	93.7				2		0.7	2		0.7	2		0.7	11		4.1
Meteorology	153	6	3.9	117	5	88.6													15	1	11.2
Atmos Phy & Chem	14	2	14.3	12	2	92.3													1		7.1
Atmos Dynamics	11			9		90.0													1		10.0
Atmos Sci. Other	16	4	25.0	13	1	81.3													3	3	18.8
Applied GFO	71	1	1.4	61	1	93.8							1		1.6				3		4.6
Fuel Technology	16	1	6.3	9	1	75.0													3		25.0
Earth Sci., Gen.	108	4	3.7	84	3	92.3	2		2.2										5		5.6
Earth Sci., Othr	84	7	8.3	72	5	98.6				1		1.4									
ENGINEERING TOTAL	8,934	130	1.5	6,452	101	82.6	75		1.0	24		0.3	34		0.4	17		0.2	1,217	17	15.6
Aeronaut & Astro	460	6	1.3	356	4	88.6	2		0.5	3		0.7	1		0.2	1		0.2	39		9.1
Agricultural Eng	144	1	0.7	118		90.8				1		0.8							11		8.0
Biomedical Eng	255	9	3.5	213	9	91.8	1		0.4	4		1.7							14		6.0
Civil Eng	782	11	1.4	494	8	75.9	6		0.9	4		0.6	1			2		0.2	144	1	22.2
Chemical Eng	1,046	14	1.3	707	11	77.6	3		0.3	2		0.2	8		0.9	4		0.4	187	1	20.0
Ceramic Eng	78	2	2.6	62	2	91.2													6		5.0
Computer Eng	147	13	8.8	117	13	87.3				1		0.7							16		11.0
Electrical Eng	1,706	13	0.8	1,261	11	83.6	20		1.3	1		0.1	8		0.5				219	2	14.0
Electronics Eng	280			205		81.0	7		2.8	1		0.4	1		0.4				39		15.4
Industrial Eng	269	6	2.2	214	5	91.5	3		1.3				1		0.4				11		2.0
Nuclear Eng	357	5	1.4	284	4	89.3	2		0.6							2		0.6	30		9.4
Engineer Mech	480	4	0.8	315	1	73.1	4		0.9	1		0.2	2		0.5	1		0.2	108	1	25.0
Engineer Phys	82	2	2.4	65		84.4	1		1.3										11	2	14.0
Mechanical Eng	1,054	12	1.1	735	9	80.7	12		1.3	2		0.2	5		0.5				157	3	17.2
Metallurgy	356	5	1.4	269	5	85.4	4		1.3				2		0.6	1		0.3	39		12.4
Sys Design	111			90		84.9	1		0.9				1		0.9	2		1.9	12	1	11.0
Operations Res	321	7	2.2	255	6	87.9	3		1.0				1		0.3	2		0.7	29	1	10.0
Fuel Technology	25			18		78.3													5		21.0
Sanitary Eng	125	2	1.6	93	1	83.8	2		1.8	1		0.9				1		0.9	14		12.0
Mining Eng	17			10		71.4													4		28.6
Materials Sci	357	9	2.5	246	5	78.6	3		1.0				2		0.6				62	1	19.0
Eng, General	103			72		82.8													15		17.2
Eng, Other	379	8	2.1	270	7	84.1	1		0.3	3			1		0.9	1			45	4	12.0

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APPENDIX A (continued)

FIELD OF PH.D.	TOTAL *			WHITE			BLACK			AM. INDIAN			CHICANO			PUERTO RICAN			ASIAN		
	Total	W	%Wn	Total	W	%Wh	Total	W	%Bl	Total	W	%In	Total	W	%Ch	Total	W	%PR	Total	W	%As
LIFE SCIENCE	16,691	3,288	19.7	13,716	2,687	91.0	269	82	1.8	66	12	0.4	107	14	0.7	29	4	0.2	882	225	5.9
BIO SCIENCE	11,508	2,645	23.0	9,472	2,167	92.0	185	64	1.8	47	11	0.5	84	11	0.8	17	3	0.2	536	168	5.2
Biochemistry	2,163	498	23.0	1,736	394	88.6	30	7	1.5	10	2	0.5	16		0.8	4	1	0.2	164	50	8.4
Biophysics	383	44	11.5	317	34	90.6	5	1	1.4	1		0.3	3		0.9				24	7	6.9
Biomet, Biostat	124	28	22.6	101	25	90.2							1		0.9				10	2	8.9
Anatomy	466	105	22.5	398	91	93.5	5		1.2	2	1	0.5	1		0.2	1		0.2	17	5	4.0
Cytology	152	53	34.9	124	41	87.3	6	1	4.2				3	2	2.1				9	5	6.3
Embryology	84	27	32.1	70	24	93.3	1		1.3										4	1	5.3
Immunology	255	77	30.2	215	66	90.0	7	4	2.9	1		0.4	1		0.4	1		0.4	14	4	5.9
Botany	639	132	20.7	537	105	94.9	6	4	1.1	2		0.4	7	2	1.2				14	5	2.5
Ecology	523	67	12.8	451	58	95.3	5	3	1.1	6		1.3	2		0.4	1		0.2	8	1	1.7
Hydrobiology	48	3	6.3	41	3	100.0															
Microbio & Bact	1,339	360	26.9	1,071	299	89.3	34	12	2.8	8	4	0.7	14	2	1.2	2		0.2	71	14	5.9
Animal Physiol	1,193	223	18.7	1,025	203	94.9	14	2	1.3	1		0.1	7		0.6	1		0.1	32	9	3.0
Plant Physiology	231	48	20.8	194	36	91.5	2	1	0.9	3		1.4	1		0.5				12	7	5.7
Zoology	1,039	206	19.8	870	173	95.4	22	6	2.4	4	1	0.4	3	1	0.3	1		0.1	12	4	1.3
Genetics	429	133	31.0	356	110	89.0	10	7	2.5	2	1	0.5	4		1.0				28	7	7.0
Entomology	534	30	5.6	465	25	95.9	6	1	1.2	2		0.4	4		0.8	1		0.2	16	3	3.3
Molecular Bio	514	162	31.5	431	137	91.1	9	5	1.9				3	1	0.6	2	1	0.4	28	11	5.9
Nutrition/Diet	67	37	55.2	52	30	80.0	2	1	3.1	1		1.5	1		1.5				9	5	13.8
Bio Sci, General	639	180	28.2	486	137	92.2	10	3	1.9	1		0.2	8	2	1.5	1		0.2	21	8	4.0
Bio Sci, Other	686	232	33.8	532	176	89.4	10	6	1.7	3	2	0.5	5	1	0.8	2		0.3	43	20	7.2
AGRICULTURAL SCI	2,753	134	4.9	2,297	96	90.8	31	2	1.2	13	1	0.5	13	2	0.5	5		0.2	171	21	6.8
Agronomy	325	4	1.2	274	1	91.6	6		2.0	1		0.3	2		0.7	1		0.3	15	2	5.0
Agricultural Econ	441	12	2.7	362	5	90.5	8		2.0	3	1	0.8	5		1.3				22	3	5.5
Animal Husbandry	75	1	1.3	61	1	96.8	1		1.6										1		1.6
Food Sci & Tech	274	50	18.2	194	35	77.9	1	1	0.4	1		0.6	2	1	0.8				51	9	20.5
Fish & Wildlife	199	7	3.5	169	6	94.9	1		0.6	1									7		3.9
Forestry	233	2	0.9	208	2	95.8													9		4.1
Horticulture	146	6	4.1	123	5	91.8	4		3.0							1		0.7	6	1	4.5
Soil and Soil Sci	205	3	1.5	169	2	91.8	4		2.2				1			1		0.5	9	2	4.9
Animal Sci	358	22	6.1	315	20	91.0	4		1.2	3		0.9	1		0.3	1		0.3	22	3	6.4
Phytopathology	267	19	7.1	228	13	90.1	1	1	0.4	3		1.2	1	1	0.4				20		7.9
Ag, General	11	1	9.1	10	1	90.9													1		9.1
Ag, Other	219	7	3.2	184	5	93.9	1		0.5	1		0.5	1		0.5	1		0.5	8	1	4.1
MEDICAL SCIENCE	2,028	464	22.9	1,605	385	88.3	47	13	2.6	6		0.3	9	1	0.5	3	1	0.2	147	35	8.1
Med & Surgery	17			10		71.4													4		28.6
Public Health	355	130	36.6	284	110	86.3	23	8	7.0	3		0.9	3	1	0.9	1	1	0.3	15	7	4.6
Veterinary Med	78	7	9.0	65	7	92.9	1		1.4				1		1.4				3		4.3
Hospital Admin	19			17		100.0															
Parasitology	74	13	17.6	65	11	90.3	1		1.4							1		1.4	5	2	6.9
Pathology	263	44	16.7	211	38	89.4	6	1	2.5	2		0.9	1		0.4				16	2	6.8
Pharmacology	620	102	16.5	507	84	90.0	12	2	2.1				1		0.2	1		0.2	42	10	7.5
Pharmacy	230	18	7.8	148	8	75.1	3	1	1.5				1		0.5				45	8	22.9
Med Sci, General	59	13	22.0	37	8	88.1				1		2.4	1		2.4				3		7.1
Med Sci, Other	313	137	43.8	261	119	94.2	1	1	0.4				1		0.4				14	6	5.0

APPENDIX A (continued)

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FIELD OF PH.D.	TOTAL *			WHITE			BLACK			AM. INDIAN			CHICANO			PUERTO RICAN			ASIAN		
	Total	W	%Wmn	Total	W	%Wh	Total	W	%Bl	Total	W	%In	Total	W	%Ch	Total	W	%PR	Total	W	%As
ENVIRONMENTAL SCI	402	45	11.2	342	39	89.8	6	3	1.6				1		0.3	4		1.0	28	1	7.3
SOCIAL SCIENCE	12,056	2,436	20.2	10,007	2,105	83.0	315	73	2.6	49	12	0.4	86	9	0.7	21	9	0.2	289	41	2.4
Anthropology	1,381	476	34.5	1,149	410	94.5	26	10	2.1	9	3	0.7	13	3	1.1	2		0.2	17	7	1.4
Communications	927	248	26.8	830	216	95.4	25	16	2.9	4	1	0.4	5		0.6	1	1	0.1	5	2	0.6
Sociology	2,304	702	30.5	1,924	610	91.8	97	29	4.6	8	3	0.4	17	2	0.8	5	4	0.2	46	9	2.2
Economics	2,645	262	9.9	2,214	228	93.9	30	3	1.3	8		0.3	13		0.6	3		0.1	90	8	3.8
Econometrics	94	3	3.2	60	3	88.2				1		1.5							7		10.3
Statistics	109	10	9.2	84	5	85.7	1		1.0				1		1.0	1	1	1.0	11	2	11.3
Geography	632	48	7.6	546	41	94.8	14	1	2.4	6		1.0	1		0.2				9		1.6
Area Studies	113	26	23.0	79	19	84.0	6	1	6.4				3		3.2				6	4	6.4
Pol Sci, Pub Ad	2,032	309	15.2	1,631	271	92.1	55	4	3.1	3	2	0.2	18	3	1.0	7	3	0.4	57	5	3.2
Political Sci	540	103	19.1	477	90	93.3	14	5	2.7	3	1	0.6	6	1	1.2	2		0.4	9		1.8
Public Admin	69	11	15.9	47	7	81.0	5		8.6	1		1.7	4		6.9				1		1.7
Intl Relations	408	59	14.5	322	51	92.8	6		1.7	4	1	1.2	2		0.6				13	1	3.7
Urban & Reg Plan	238	30	12.6	189	27	88.3	16	1	7.5				1		0.5				8		3.7
Social Sci, Gen	126	33	26.2	100	32	93.5	4	1	3.7				1		0.9				2	1	1.9
Social Sci, Other	438	113	25.8	355	95	92.9	16	2	4.2	2	1	0.5	1		0.3				8	2	2.1
PSYCHOLOGY	10,094	3,147	31.2	8,755	2,742	94.9	240	89	2.6	47	11	0.5	64	10	0.7	29	7	0.3	88	38	1.0
Clinical Psych	3,128	965	30.9	2,777	865	95.4	69	21	2.4	12	2	0.4	20	4	0.7	11	1	0.4	20	7	0.7
Counsel & Guid	867	270	31.1	743	227	93.6	32	13	4.0	6	2	0.8	6	1	0.8	4	1	0.5	3	3	0.4
Devel & Geront	645	338	52.4	771	297	97.2	8	6	1.0	1		0.1	4		0.5				9	6	1.1
Ed Psych	670	155	23.1	394	135	92.9	17	5	4.0	2		0.5	6	1	1.4				5	3	1.2
School Psych	438	184	42.0	381	155	96.0	12	7	3.0	1		0.3				1	1	0.3	2		0.5
Experimt Psych	1,339	337	25.2	1,209	309	97.0	11	3	0.9	7		0.6	5	1	0.4	1		0.1	13	4	1.0
Comparative	93	22	23.7	85	22	97.7				1		1.1				1		1.1			
Physiological	474	134	28.3	411	121	94.5	7	2	1.6	2		0.4	6		1.4	3		0.7	6		1.4
Indust & Pers	267	28	10.5	246	27	96.5	2		0.8	1		0.4	1		0.4	2		0.8	3	1	1.2
Personality	226	76	33.6	196	70	94.2	7	1	3.4	1	1	0.5	2		1.0				2	1	1.0
Psychometric	85	14	16.5	70	11	92.1	1		1.4				2		2.6	1		1.3	2	1	2.6
Social Psych	789	221	28.0	673	181	92.3	34	14	4.7	4	1	0.5	1	1	0.1	2	2	0.3	15	9	2.1
Psych, Gen	680	210	30.9	492	153	93.9	21	10	4.0				3	1	0.6	3	2	0.6	5	1	0.9
Psych, Other	593	193	32.5	507	169	92.9	19	7	3.5	9	5	1.6	8		1.5				3	2	0.5
PROFESSIONAL FIELDS	4,987	819	16.4	4,173	664	92.9	142	54	3.2	18	5	0.4	29	8	0.6	10	2	0.2	119	20	2.7
Religion & Theo	47	3	6.4	1		100.0															
Theology	609	50	8.2	566	49	95.3	13	1	2.2	2		0.3	3		0.5	1		0.2	9		1.5
Business Admin	2,588	109	4.2	2,201	90	94.5	37	4	1.6	6		0.3	12	1	0.5	2		0.1	70	4	3.0
Home Economics	186	158	84.9	164	138	93.2	6	6	3.4	2	2	1.1							4	4	2.3
Journalism	70	7	10.0	56	4	93.3	2	2	3.3				1		1.7				1		1.7
Speech & Hearing	524	182	34.7	449	156	95.1	13	8	2.8	3	1	0.6	1	1	0.2	1			5	2	1.1
Law, Jurisprud	39	2	5.1	30	1	85.7	1		2.9										4		11.4
Social Work	477	168	35.2	323	111	79.0	56	27	13.7	2	2	0.5	10	6	2.4	6	2	1.5	12	4	2.9
Lib & Arch Sci	230	89	38.7	186	68	89.0	9	6	4.3	2		1.0	1		0.5				11	5	5.3
Prof Field, Other	217	51	23.5	197	47	95.2	5		2.4	1		0.5	1		0.5				3	1	1.4

APPENDIX A (continued)

FIELD OF PH.D.	TOTAL *			WHITE			BLACK			AM. INDIAN			CHICANO			PUERTO RICAN			ASIAN		
	Total	W	%Wm	Total	W	%Wh	Total	W	%Bl	Total	W	%In	Total	W	%Ch	Total	W	%PR	Total	W	%As
ARTS & HUMANITIES	19,005	6,091	32.0	16,113	5,226	94.4	339	115	2.0	93	28	0.5	247	82	1.4	33	10	0.2	249	79	1.5
Art, Applied	17	3	17.6	12	3	100.0															
Art, Hist & Crit	491	255	51.9	421	222	96.8	6	1	1.4	1		0.2	4	1	0.9				3	1	0.7
Hist, American	1,677	290	17.3	1,448	256	95.0	49	14	3.2	15	4	1.0	8		0.5				5	3	0.3
Hist, European	1,338	273	20.4	1,197	254	98.3	6		0.5				7	2	0.6	2		0.2	6	1	0.5
History, Other	1,257	256	20.4	951	197	89.8	32	8	3.0	6		0.6	16		1.5	5	2	0.5	49	10	4.6
Hist & Phil/Sci	116	37	31.9	93	33	93.9	2		2.0	1		1.0							3		3.0
American Studies	146	40	27.4	133	35	93.7	7	2	4.9	2	2	1.4									
Music	1,336	285	21.3	1,139	236	94.5	30	6	2.5	4	1	0.3	8	2	0.7				24	8	2.0
Speech as dr Art	575	158	27.5	465	124	94.9	12	8	2.5	5	3	1.0	2		0.4				6	1	1.2
Archeology	78	37	47.4	72	34	97.3				2		2.7									
Religion	651	60	9.2	584	56	93.9	11		1.8	2		0.3	1	1	0.2	1		0.2	23	2	3.7
Philosophy	1,442	234	16.2	1,242	209	96.3	14	1	1.1	7	1	0.5	6		0.5	2	2	0.2	18	2	1.4
Linguistics	576	225	39.1	448	179	92.2	8	2	1.7	4	1	0.8	5	2	1.0				21	9	4.3
Comparative Lit	140	82	58.6	126	76	94.0	2	1	1.5				1		0.8				5	2	3.7
American L & L	982	358	36.5	867	321	96.0	24	12	2.7	8	2	0.9	3	1	0.3				1		0.1
English L & L	4,013	1,600	39.9	3,509	1,401	96.4	62	30	1.7	23	8	0.6	12	4	0.3	1		0.1	34	18	0.9
German L & L	657	301	45.8	584	270	98.0	9	2	1.5	1		0.2									
Russian L & L	219	94	42.9	202	87	99.5	1		0.5												
French L & L	985	596	60.5	869	534	95.6	29	11	3.2	3	1	0.3	2	2	0.2				6	6	0.7
Span & Port L & L	909	379	41.7	622	274	76.2	13	7	1.6	2	1	0.3	157	61	19.2	21	6	2.6	1		0.1
Italian L & L	89	33	37.1	82	30	100.0															
Classical L & L	323	114	35.3	287	104	98.6	1		0.3	1		0.3	2	1	0.7						
Other Lang	375	119	31.7	275	79	89.9	2	1	0.6	3	3	1.0	5	1	1.6				21	5	6.9
Arts & Hum, Gen	90	34	37.8	70	23	88.6	4	3	5.1	1		1.3	2	1	2.5				2		2.5
Arts & Hum, Other	523	229	43.8	415	189	92.8	15	6	3.4	2	1	0.5	5	3	1.1	1		0.2	9	2	2.0
EDUCATION	27,596	8,045	29.2	22,211	6,397	88.3	2,155	793	8.6	178	42	0.7	285	62	1.1	66	31	0.3	255	92	1.0
Foundations-S & P	962	269	28.0	735	208	87.1	68	26	8.0	4		0.5	11	2	1.3	5	1	0.6	21	10	2.5
Ed Psych	1,801	709	39.4	1,513	608	91.7	76	33	4.6	16	2	1.0	10	3	0.6	4	1	0.2	31	12	1.9
Elem Ed, Gen	1,111	574	51.7	818	443	89.7	72	56	7.9	6	3	0.7	5	1	0.5				11	10	1.2
Secondy Ed, Gen	792	197	24.9	645	160	90.3	51	19	7.1	9	1	1.3	5	3	0.7	2	1	0.3	2		0.3
Higher Ed	2,273	510	22.4	1,896	409	87.2	215	58	9.9	17	3	0.8	23	3	1.1	13	11	0.6	11	6	0.5
Adult Ed	562	137	24.4	487	114	90.3	36	10	6.7	3	1	0.6	8	1	1.5	2	1	0.4	3	2	0.6
Ed Meas & Stat	379	106	28.0	311	90	91.5	12	5	3.5	3		0.9	2		0.6				12	3	3.5
Curri & Instr	2,868	1,056	36.8	2,411	863	87.3	257	117	9.3	19	10	0.7	43	11	1.6	6	5	0.2	26	14	0.9
Educ Admin & Sup	5,756	829	14.4	4,451	587	84.8	613	166	11.7	40	2	0.8	95	14	1.8	9	3	0.2	36	2	0.7
Guidance	2,650	794	30.0	2,200	654	90.0	186	69	7.6	14	4	0.6	28	7	1.1	4		0.2	13	5	0.5
Special Ed	1,133	460	40.6	922	371	90.3	61	32	6.0	15	3	1.5	14	3	1.4	1		0.1	8	4	0.8
Audio-Vis Med	343	61	17.8	282	45	91.3	13	5	4.2	1	1	0.3	2		0.7	1	1	0.3	10	2	3.2
Agriculture	93			72		82.8	12		13.8	2		2.3				1		1.1			
Art	200	79	39.5	156	66	90.2	12	3	6.9	1	1	0.6	1		0.6				3	2	1.7
Business	332	117	35.2	281	82	90.6	24	19	7.7	2	2	0.7	1		0.3				2	1	0.7
English	342	162	47.4	261	116	87.0	32	24	10.7	2	1	0.7	1		0.3	1	1	0.3	3	3	1.0
Foreign Lang	99	46	46.5	74	35	87.1	5	4	5.9	2	1	2.3	1	1	1.2	3	1	3.5			
Home Economics	121	118	97.5	96	93	87.3	14	14	12.7												
Indust Arts	206	2	1.0	170	2	90.4	8		4.3	2		1.1				2		1.1	6		3.2
Mathematics	418	103	24.6	329	87	91.1	25	7	6.9				2		0.6	1	1	0.3	4		1.1
Music	418	101	24.2	348	79	92.3	22	10	5.8	1	1	0.3	1	1	0.3				5	2	1.3

APPENDIX A (continued)

PROFESSIONAL WOMEN AND MINORITIES • SCIENTIFIC MANPOWER COMMISSION • 11/78

FIELD OF PH.D.	TOTAL *			WHITE			BLACK			AM. INDIAN			CHICANO			PUERTO RICAN			ASIAN	
	Total	W	%Wn	Total	W	%Wh	Total	W	%Bl	Total	W	%In	Total	W	%Ch	Total	W	%PR	Total	%As
EDUCATION (Con't.)																				
Reading	111	87	78.4	101	78	92.7	6	5	5.5				1	1	0.9					
Physical Ed	1,244	391	31.4	1,036	341	95.0	33	5	3.0	5	2	0.5	5	2	0.5	2	1	0.2		
Science Ed	467	74	15.9	344	57	88.9	33	5	8.5	2		0.5	2		0.5	2		0.5		
Social Sci Ed	224	50	22.3	171	41	90.0	13	3	6.8				2	1	1.1	1		0.5		
Speech Ed	40	12	30.0	37	10	94.9	1	1	2.6	1	1	2.6								
Vocational Ed	656	117	17.8	555	105	91.6	39	7	6.4	4		0.7	3		0.5					
Other Teaching Fld	464	259	55.8	357	196	92.2	24	17	6.2	1		0.3				1	1	0.3		
Education, Gen	911	300	64.7	626	214	80.9	118	36	15.2	3	2	0.4	11	5	1.4	3	3	0.4		
Ed, Other	720	325	45.1	526	243	84.7	74	37	11.9	3	1	0.5	8	3	1.3	2	2	0.3		
Other, Unsp Fld	118	24	20.3	94	24	92.2	2		2.0				1		1.0					
TOTAL ALL FIELDS	115,523	25,258	21.9	94,530	20,954	93.6	3,692	1,221	3.7	526	114	0.5	937	188	0.9	224	65	0.2	4,163	66

* Includes All U.S. Citizens plus doctoral recipients with permanent visas. Includes recipients whose race/ethnic group is unknown.

Note: Divisor for percentage is derived by subtracting from total in column 1 all whose race/ethnic group is unknown.
Percentages may not add to 100 due to rounding.

APPENDIX B

DEMOGRAPHIC CHARACTERISTICS OF EMPLOYED PH.Ds IN 1973

Age	All Ph.Ds in Science and Engineering			Percent in Academia	Those employed in four year colleges and universities		
Under 30							
Total (% of total pool)	8,049	(3.8)		55.1	4,435	(3.8)	
Women (% of total) (% of women)	800	(9.9) (5.2)		73.0	584	(13.1) (5.8)	
30 - 34							
Total (% of total pool)	46,543	(22.2)		55.3	25,763	(21.9)	
Women (% of total) (% of women)	3,141	(6.7) (20.5)		68.9	2,165	(8.4) (21.5)	
35 - 39							
Total (% of total pool)	40,588	(19.3)		56.9	23,095	(19.7)	
Women (% of total) (% of women)	2,589	(6.4) (16.9)		68.2	1,767	(7.6) (17.6)	
40 - 44							
Total (% of total pool)	34,150	(16.3)		56.6	19,325	(16.5)	
Women (% of total) (% of women)	2,282	(66.8) (14.9)		64.3	1,467	(7.6) (14.6)	
45 - 49							
Total (% of total pool)	28,853	(13.8)		55.8	16,100	(13.7)	
Women (% of total) (% of women)	2,276	(7.9) (14.9)		62.7	1,427	(8.9) (14.2)	
50 - 54							
Total (% of total pool)	23,313	(11.1)		54.1	12,606	(10.7)	
Women (% of total) (% of women)	1,669	(7.2) (10.9)		62.8	1,049	(8.3) (10.4)	
55 - 59							
Total (% of total pool)	14,981	(7.1)		54.9	8,224	(7.0)	
Women (% of total) (% of women)	1,245	(8.3) (8.1)		62.7	781	(9.5) (7.8)	

Appendix B
Demographic Characteristics of Employed Ph.Ds in 1973 (continued)

Age	All Ph.Ds in Science and Engineering		Percent in Academia	Those employed in four year colleges and universities	
60 - 64					
Total (% of total pool)	8,525	(4.1)	58.8	5,010	(4.3)
Women (% of total) (% of women)	740	(8.7) (4.8)	61.9	458	(9.1) (4.6)
Over 64					
Total (% of total pool)	4,650	(2.2)	60.1	2,797	(2.4)
Women (% of total) (% of women)	515	(11.0) (3.4)	64.8	334	(11.9) (3.3)
Total Employed Population	209,808		60.0	117,410	
Total Employed Women	15,302	(7.3% of total)	65.7	10,055	(8.6% of total)

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Appendix B (cont.)

DEMOGRAPHIC CHARACTERISTICS OF EMPLOYED PH.Ds IN 1977

Age	All Ph.Ds in Science and Engineering		Percent in Academia	Those employed in four year colleges and universities	
Under 30					
Total (% of total pool)	6,327	(2.4)	55.8	3,532	(2.5)
Women (% of total) (% of women)	1,211	(19.1) (5.0)	57.9	701	(19.8) (4.7)
30 - 34					
Total (% of total pool)	47,751	(17.9)	51.1	24,407	(16.9)
Women (% of total) (% of women)	5,479	(11.5) (22.6)	62.5	3,424	(14.0) (23.0)
35 - 39					
Total (% of total pool)	64,109	(24.0)	52.4	33,570	(23.3)
Women (% of total) (% of women)	5,137	(8.0) (21.1)	64.3	3,302	(9.8) (22.2)
40 - 44					
Total (% of total pool)	43,348	(16.2)	54.3	23,594	(16.4)
Women (% of total) (% of women)	3,253	(7.5) (13.4)	63.4	2,062	(8.7) (13.8)
45 - 49					
Total (% of total pool)	36,251	(13.6)	56.3	20,426	(14.2)
Women (% of total) (% of women)	3,048	(8.4) (12.5)	62.3	1,900	(9.3) (12.8)
50 - 54					
Total (% of total pool)	29,776	(11.1)	54.9	16,335	(11.3)
Women (% of total) (% of women)	2,626	(8.8) (10.8)	55.9	1,467	(9.0) (9.8)
55 - 59					
Total (% of total pool)	21,482	(8.0)	55.3	11,891	(8.3)
Women (% of total) (% of women)	1,710	(8.0) (7.0)	56.9	973	(8.2) (6.5)

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Appendix B
Demographic Characteristics of Employed Ph.Ds in 1977 (cont.)

<u>Age</u>	<u>All Ph.Ds in Science and Engineering</u>		<u>Percent in Academia</u>	<u>Those employed in four year colleges and universities</u>	
60 - 64					
Total (% of total pool)	12,306	(4.6)	57.1	7,033	(4.9)
Women (% of total) (% of women)	1,098	(8.9) (4.5)	63.0	692	(9.8) (4.6)
Over 64					
Total (% of total pool)	5,581	(2.1)	55.7	3,110	(2.2)
Women (% of total) (% of women)	643	(11.5) (2.6)	50.2	323	(10.4) (2.2)
TOTAL	267,206		53.9	144,034	
Total Women	24,293	(9.1% of total)	61.3	14,899	(10.3% of total)

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Appendix B (cont.)

DEMOGRAPHIC CHARACTERISTICS OF EMPLOYED PH.Ds IN 1977

Age	All Ph.Ds in Humanities and Selected Social Sciences		Percent in Academia	Those Employed in four year colleges and universities	
Under 30					
Total (% of total pool)	1,133	(1.6)	75.5	855	(1.5)
Women (% of total) (% of women)	401	(35.4) (2.9)	81.3	326	(38.1) (3.0)
30 - 34					
Total (% of total pool)	10,551	(15.0)	76.2	8,036	(14.1)
Women (% of total) (% of women)	2,598	(24.6) (18.6)	76.2	1,980	(24.6) (18.1)
35 - 39					
Total (% of total pool)	14,980	(21.4)	79.0	11,829	(20.8)
Women (% of total) (% of women)	2,865	(19.1) (20.5)	79.9	2,290	(19.4) (20.9)
40 - 44					
Total (% of total)	11,886	(16.9)	83.9	9,968	(17.5)
Women (% of total) (% of women)	2,032	(17.1) (14.5)	78.0	1,585	(15.9) (14.5)
45 - 49					
Total (% of total pool)	9,984	(14.2)	84.5	8,439	(14.8)
Women (% of total) (% of women)	1,838	(18.4) (13.1)	82.0	1,507	(17.9) (13.8)
50 - 54					
Total (% of total pool)	7,466	(10.6)	86.0	6,425	(11.3)
Women (% of total) (% of women)	1,599	(21.4) (11.4)	81.8	1,308	(20.4) (12.0)
55 - 59					
Total (% of total pool)	7,074	(10.1)	82.1	5,811	(10.2)
Women (% of total) (% of women)	1,197	(16.9) (8.6)	73.5	880	(15.1) (8.1)

Appendix B
Demographic Characteristics of Employed Ph.Ds in 1977 (cont.)

Age	All Ph.Ds in Humanities and Selected Social Sciences		Percent in Academia	Those Employed in four year colleges and universities	
60 - 64					
Total (% of total pool)	4,126	(5.9)	80.8	3,336	(5.9)
Women (% of total) (% of women)	805	(19.5) (5.8)	73.7	593	(17.8) (5.4)
Over 64					
Total (% of total pool)	2,444	(3.5)	76.0	1,859	(3.3)
Women (% of total) (% of women)	578	(23.6) (4.1)	73.0	422	(22.7) (3.9)
TOTAL	70,152		81.2	56,966	
Total Women	13,980	(19.9% of total)	78.2	10,931	(19.2% of total)

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Source for Appendix B: National Research Council Doctorate File